HITCHCOCK'S

wood working digest

MARCH · 1960

Serial Dept.
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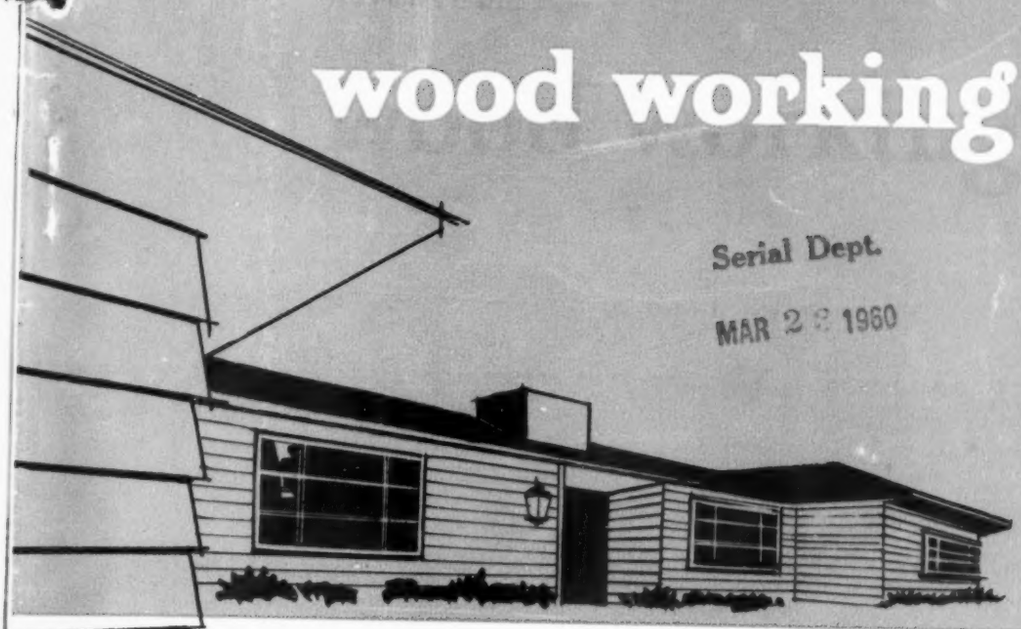
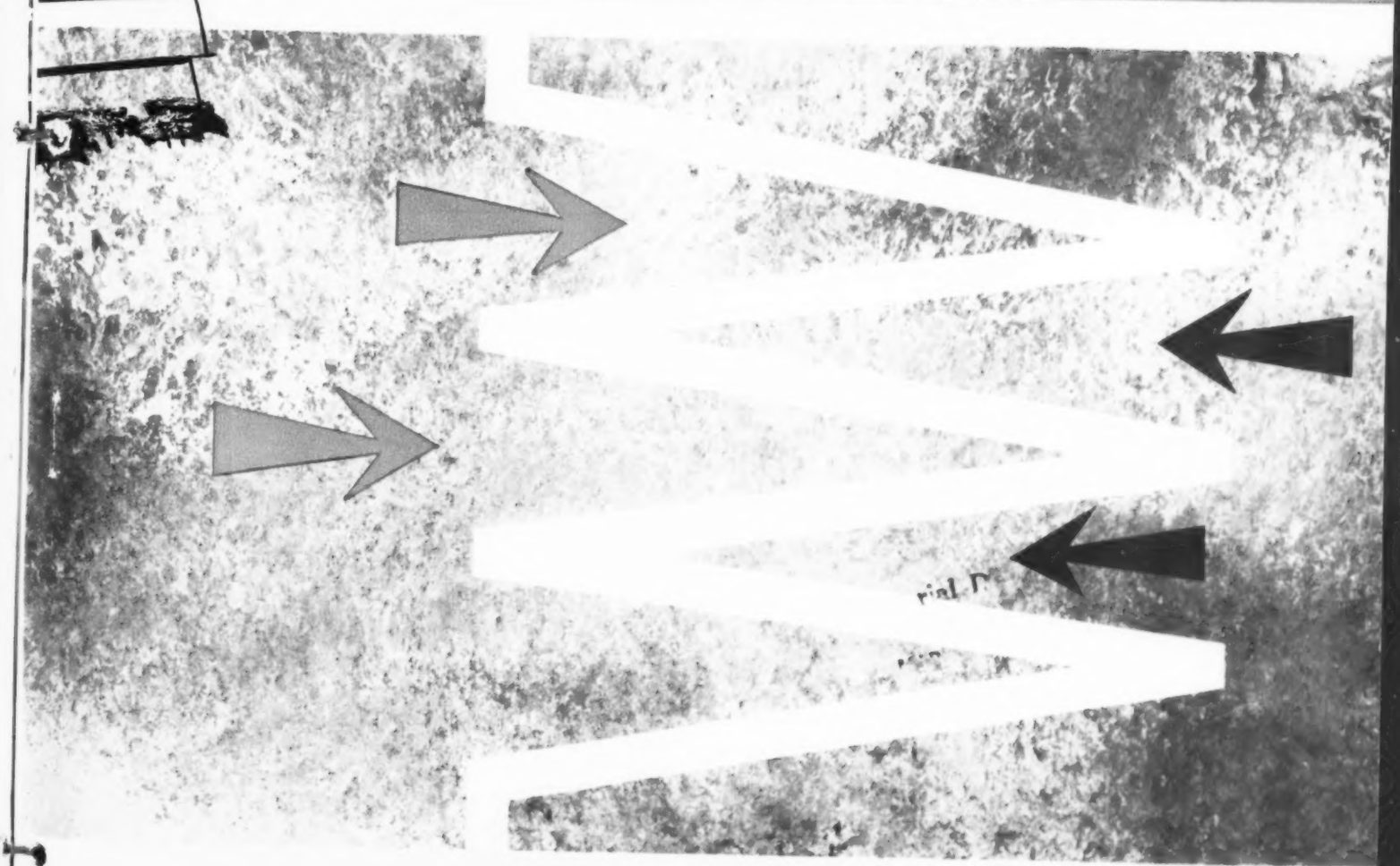




Weyerhaeuser's "Endless Plank"

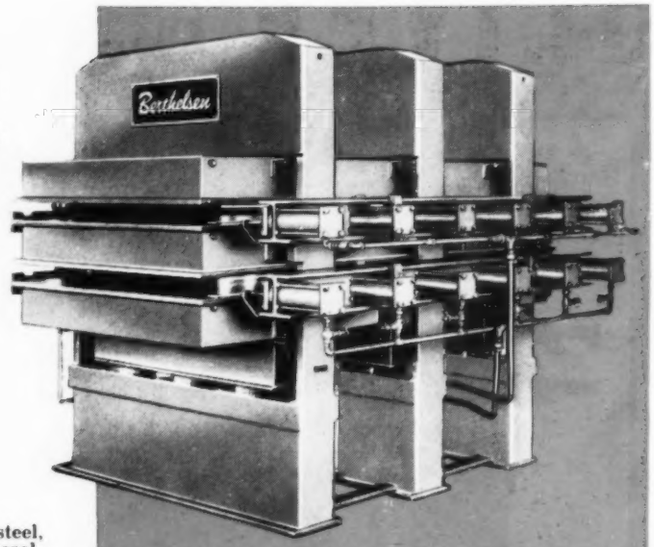
Take a close look at . . .

The

BERTHELSEN PRESS

Chambered Platen*

. . . its unique design INSURES QUALITY CONTROL unmatched by any other method of pressing . . . hot or cold!



Berthelsen Platens are constructed of firebox steel, welded by a special process to insure rigidity and parallelism. As an independent rigid structural member of the press, the platen remains flat and parallel (see Fig. 1) even if work compresses slightly (as wood does in the presence of heat and pressure). This assures uniform pressure distribution and a better, flatter more accurate panel . . . an extremely important advantage in metal bonding and plastic overlay work.

In the cut-a-way illustration of the Berthelsen Chambered Platen, arrows indicate the unrestricted flow of steam or other heating media even at low pressures and temperatures. The generous capacity of this patented design* provides a heat reservoir eliminating fluctuation in platen temperature when in contact with the press load. Heat is evenly transmitted to the work because of the large surface contact between the heating medium and the inner surfaces of the platen. (See Fig. 2) *No other platen design** can offer more uniform temperatures over even very large pressing areas in any temperature range. This exact control of temperature and pressure insures complete quality control of the end product in all types of operations.

*The Berthelsen Chambered Platen is registered at the U.S. Patent Office under Pat. No. 2,627,289 and protected by other patents in countries throughout the world. It is only one of many Berthelsen Hot Press design and construction features that insure control of the variable factors affecting quality and rate of production in pressing operations. Write today for complete brochure and help on your specific pressing problem.

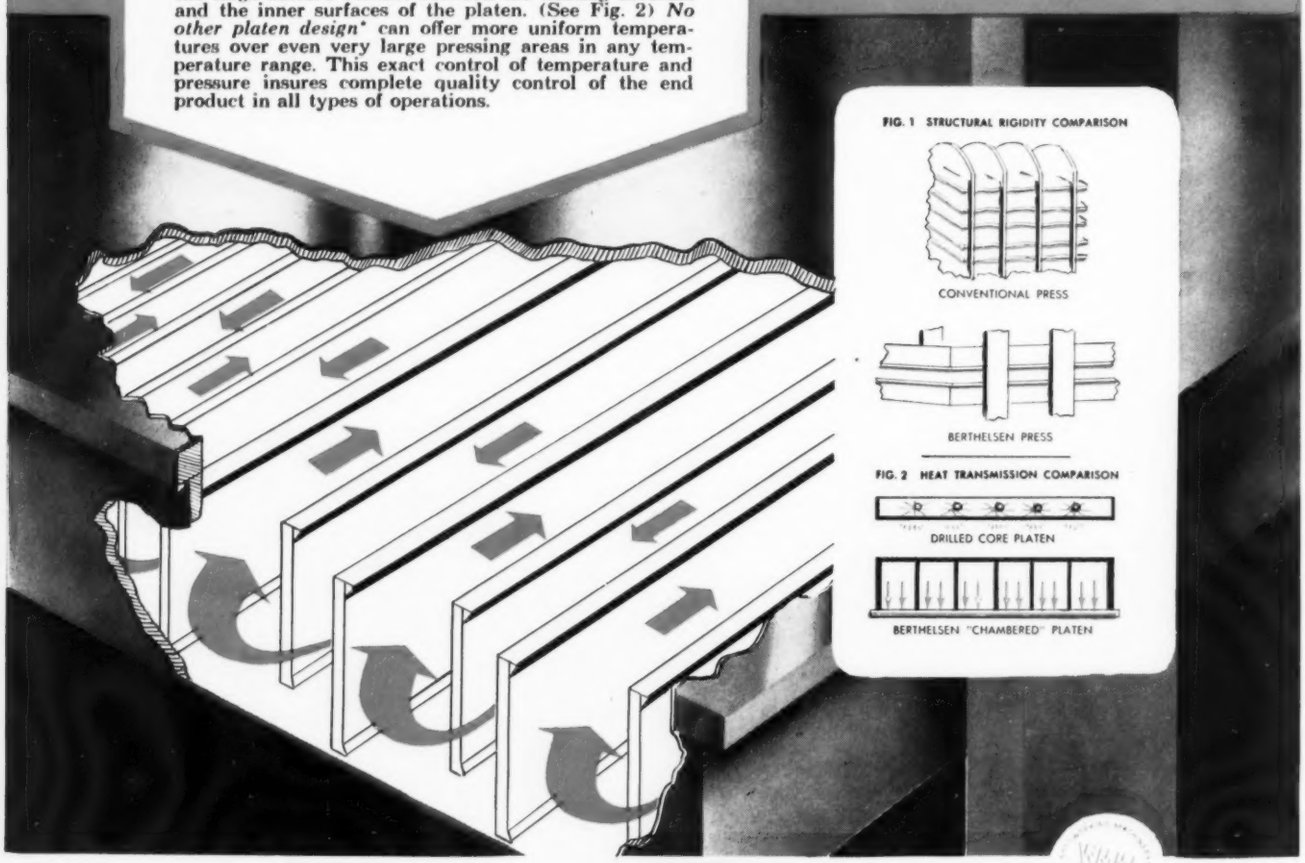


FIG. 1 STRUCTURAL RIGIDITY COMPARISON

CONVENTIONAL PRESS

BERTHELSEN PRESS

FIG. 2 HEAT TRANSMISSION COMPARISON

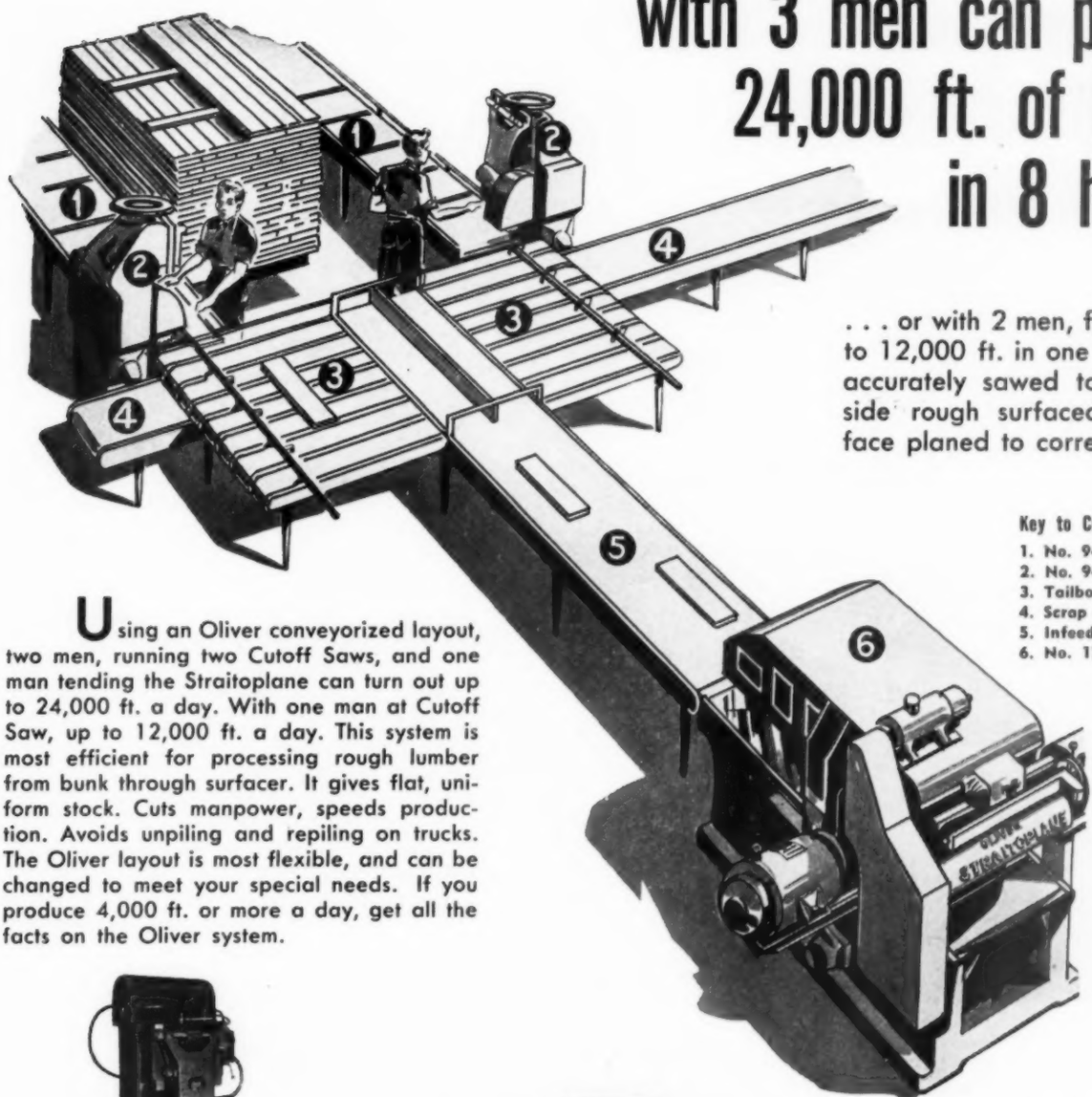
DRILLED CORE PLATEN

BERTHELSEN "CHAMBERED" PLATEN

BERTHELSEN PRESSES

P. O. BOX 1423 • LOCKPORT ROAD • JOLIET, ILLINOIS

OLIVER CONVEYORIZED ROUGH MILL with 3 men can process 24,000 ft. of lumber in 8 hours



. . . or with 2 men, from 6,000 ft. to 12,000 ft. in one day. Stock is accurately sawed to length, one side rough surfaced, other side face planed to correct dimension.

Key to Conveyorized Layout—

1. No. 94T Infeed Table
2. No. 94 Cutoff Saw
3. Tailboys
4. Scrap Conveyor
5. Infeed to Straitoplane
6. No. 170 Straitoplane

Using an Oliver conveyorized layout, two men, running two Cutoff Saws, and one man tending the Straitoplane can turn out up to 24,000 ft. a day. With one man at Cutoff Saw, up to 12,000 ft. a day. This system is most efficient for processing rough lumber from bunk through surfacer. It gives flat, uniform stock. Cuts manpower, speeds production. Avoids unpiling and repiling on trucks. The Oliver layout is most flexible, and can be changed to meet your special needs. If you produce 4,000 ft. or more a day, get all the facts on the Oliver system.

OLIVER NO. 94-DH CUTOFF SAW

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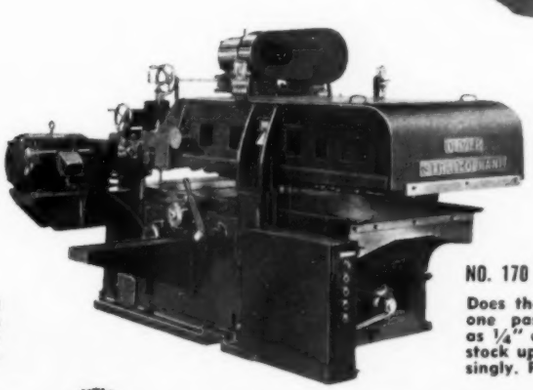

NO. 170 STRAITOPLANE

Does the work of a single surfacer and facing planer in one pass. Takes stock out-of-wind planing as much as ¼" on each side of speeds up to 90' a minute. Takes stock up to 36" wide, 6" thick, as short as 16" when fed singly. Planes many narrow strips at one time.

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Brunswick-Balke-Collender Company
Stork Line Furniture Co.
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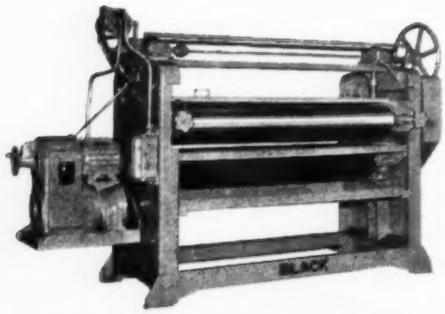
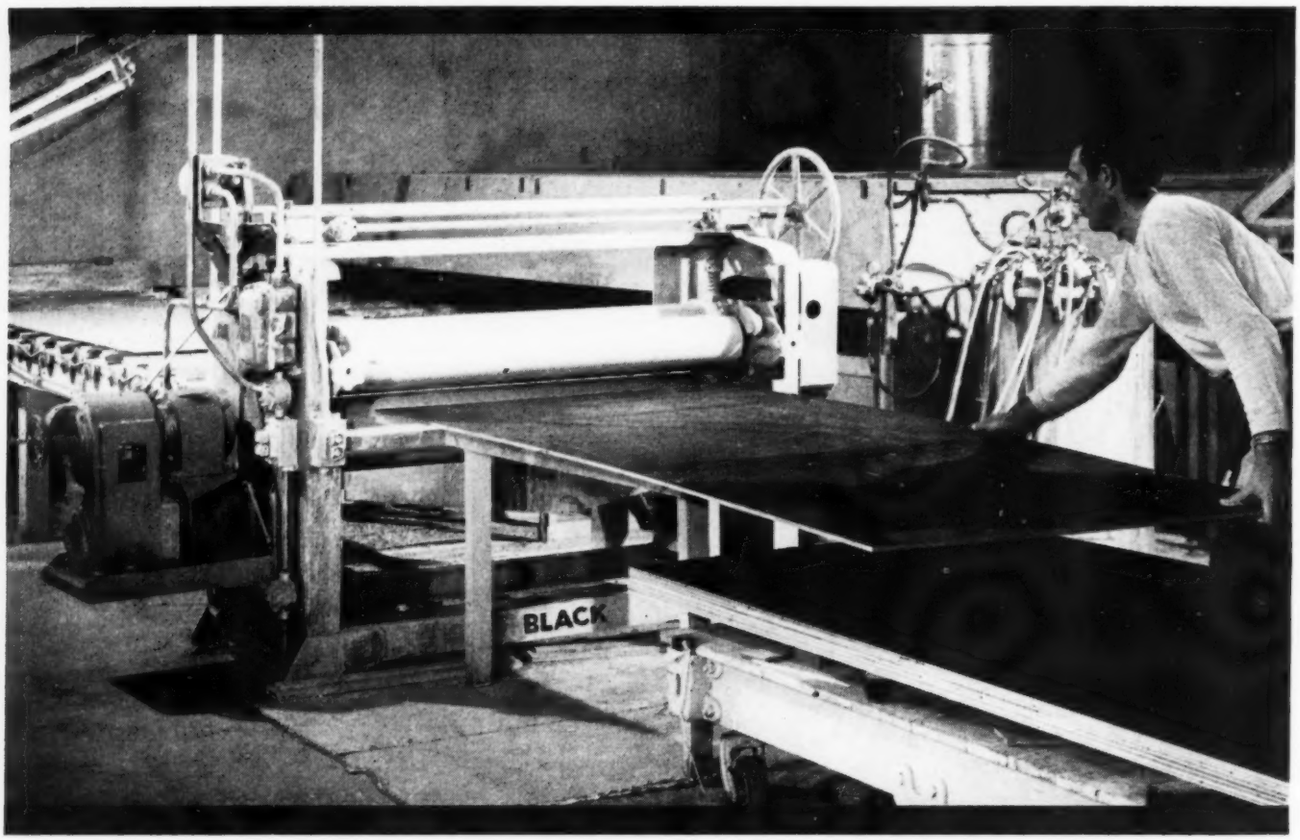


Black Brothers heavy duty roller coaters apply paints, lacquers, finishes, sealers, sizes, varnishes, stains, waxes, fillers, protective coatings, base coats, drawing compounds and other coatings to flat work such as wood, metal, plywood, composition board, hardwood, plastic, cardboard, cement board, etc.



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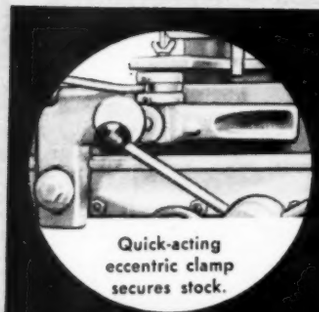

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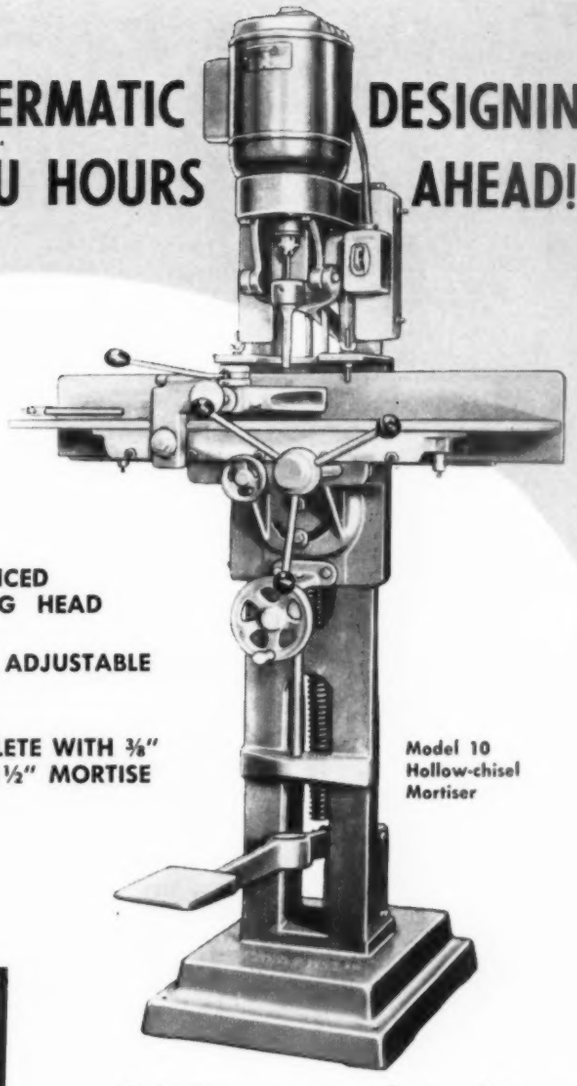
Mortise at any angle on compound table.



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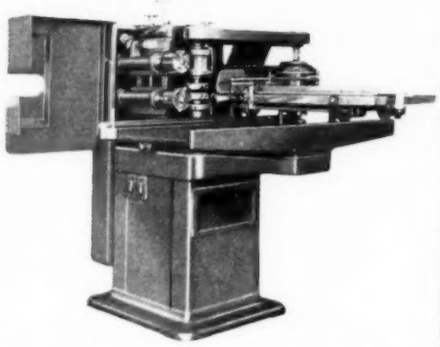
COMPLETE TENON FLEXIBILITY



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About the Cover: The cover this month dramatizes the three-finger joint described in the story on page 19. The sketch of a home implies that applications for Nu-Loc are found in the construction of the home and many wood products found within it.

BPA

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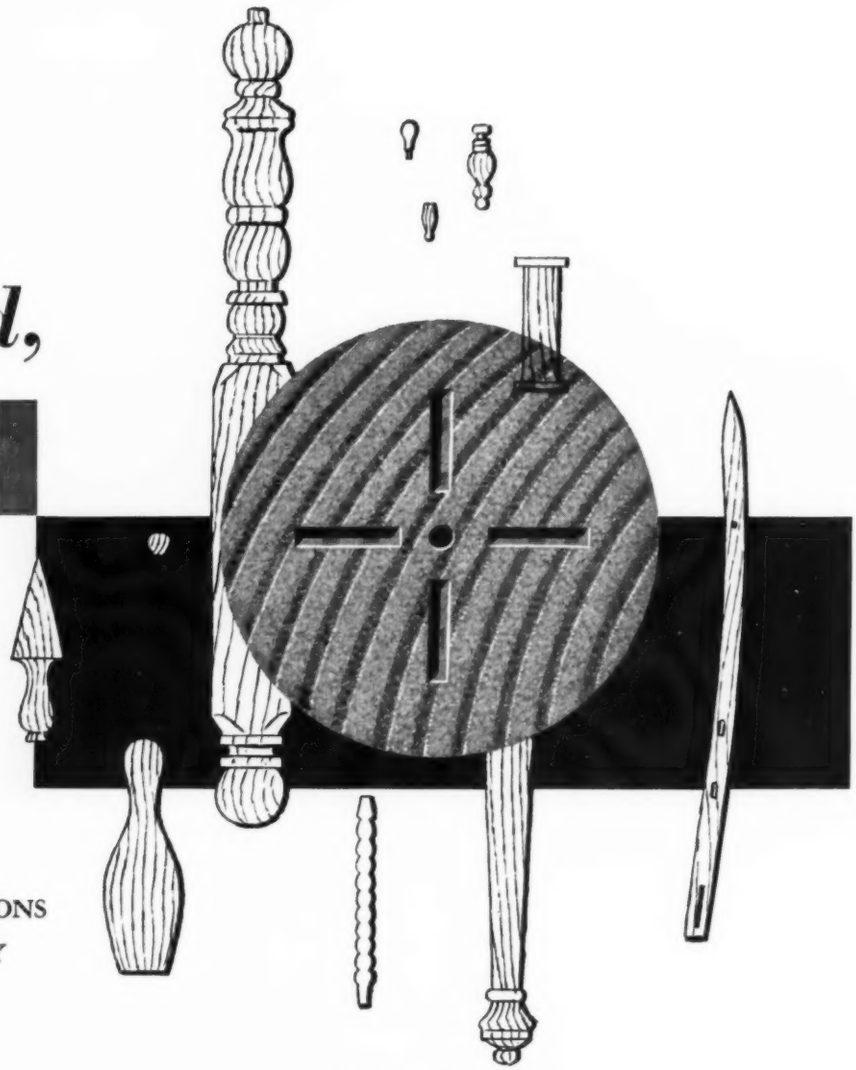
If it's turned, **NASH** *can sand it!*



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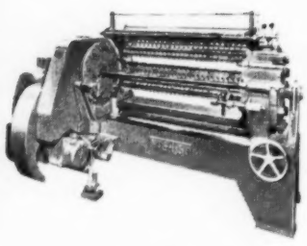

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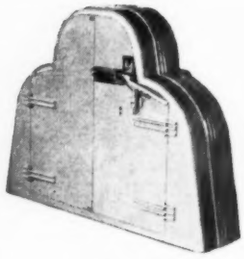

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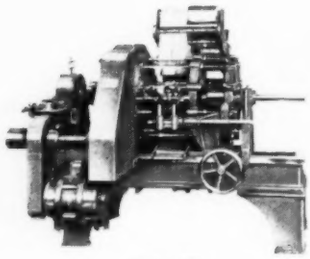

Series-30
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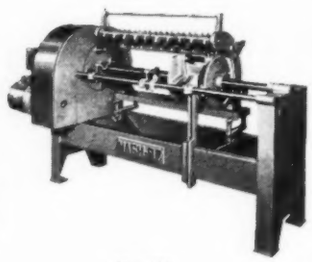
Stock Sander



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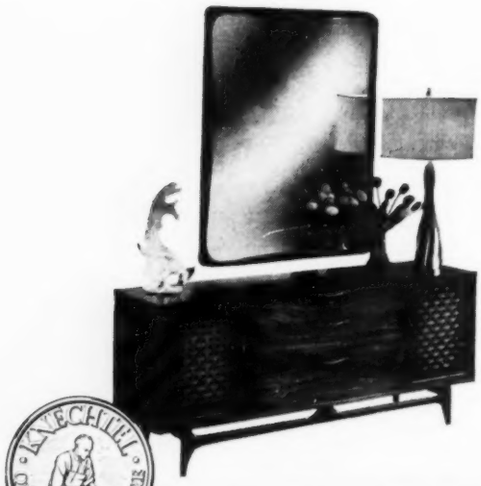

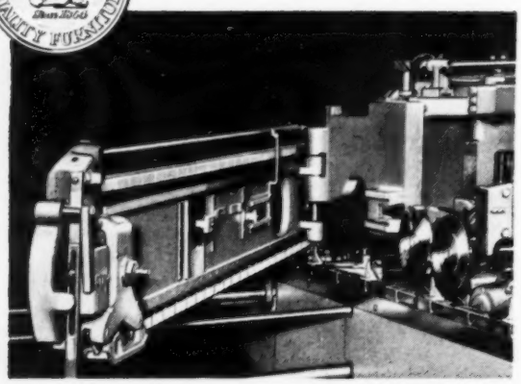

GREENLEE swing-away pressure beams reduce down-time at KNECHTEL FURNITURE LIMITED

Knechtel Furniture Limited of Hanover, Ontario produces a quality line of bedroom and dining room suites in traditional and contemporary design. Like so many other furniture manufacturers, this company is extremely well pleased with the performance of its Greenlee No. 545 Double-End Tenoner. The swing-away pressure beams are especially liked because they permit full access to the cutting units. Illustration shows the beam in the open position for easy, accurate set-ups which save time and money. Find out more about this versatile machine and its many design advantages. Write for complete information. Ask for Bulletin No. 545.

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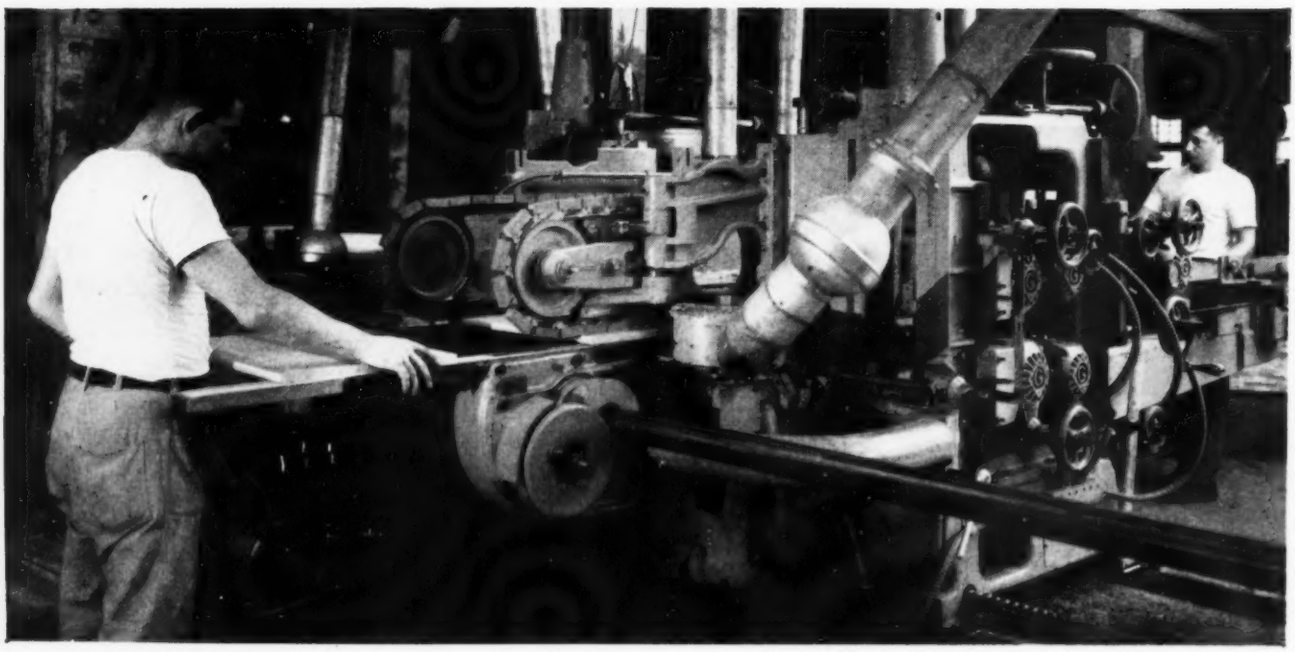

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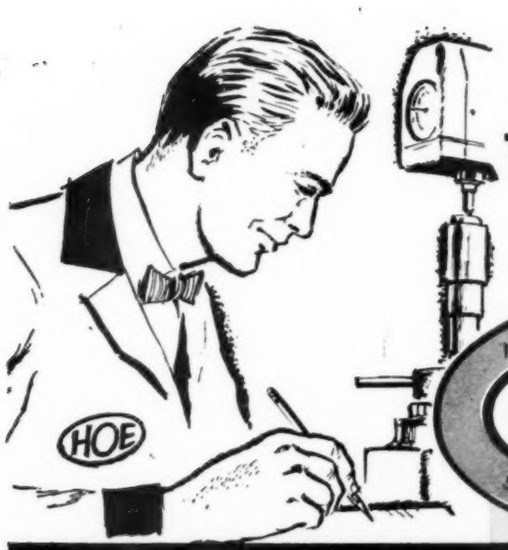

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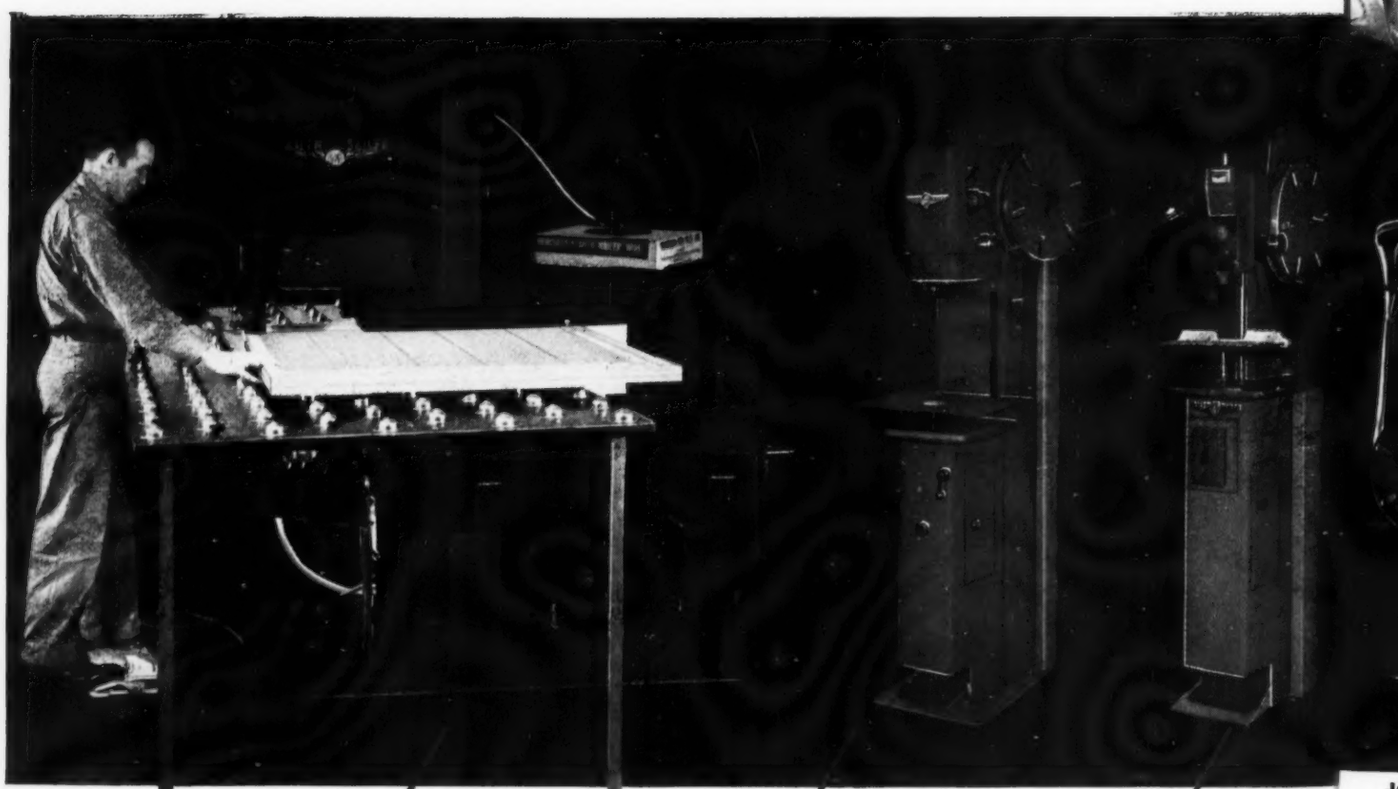
H-15-A

Look at the Auto-N

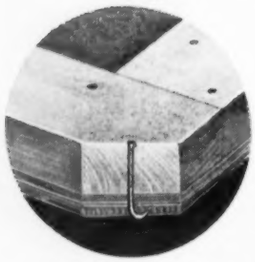
See how to speed production, improve quality, cut costs



Atlas-9 Model makes and drives nails from ½" to 2¾" long.

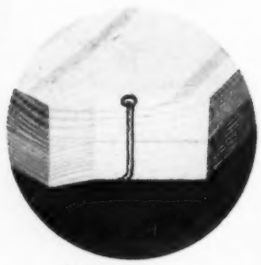
Trojan-5 Model makes and drives nails from ⅜" to 1¾" long.

Mercury-4 Model makes and drives nails from ⅜" to 1½" long.



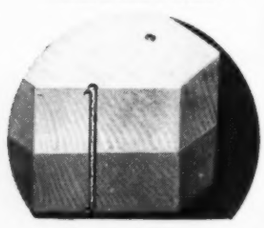
Cleated plywood —J-clinched nails.

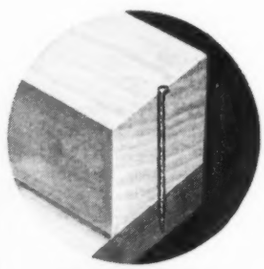
If your products can be auto-nailed, you can slash fastening costs up to 50%...increase production up to 200%...and improve quality. Actual production figures in hundreds of factories prove that rapid-fire Auto-Nailers handle long and short run nailing jobs with the economy of automation.



Skid members— brad-clinched nails with extra large heads.

Structural members —brad-clinched nails.

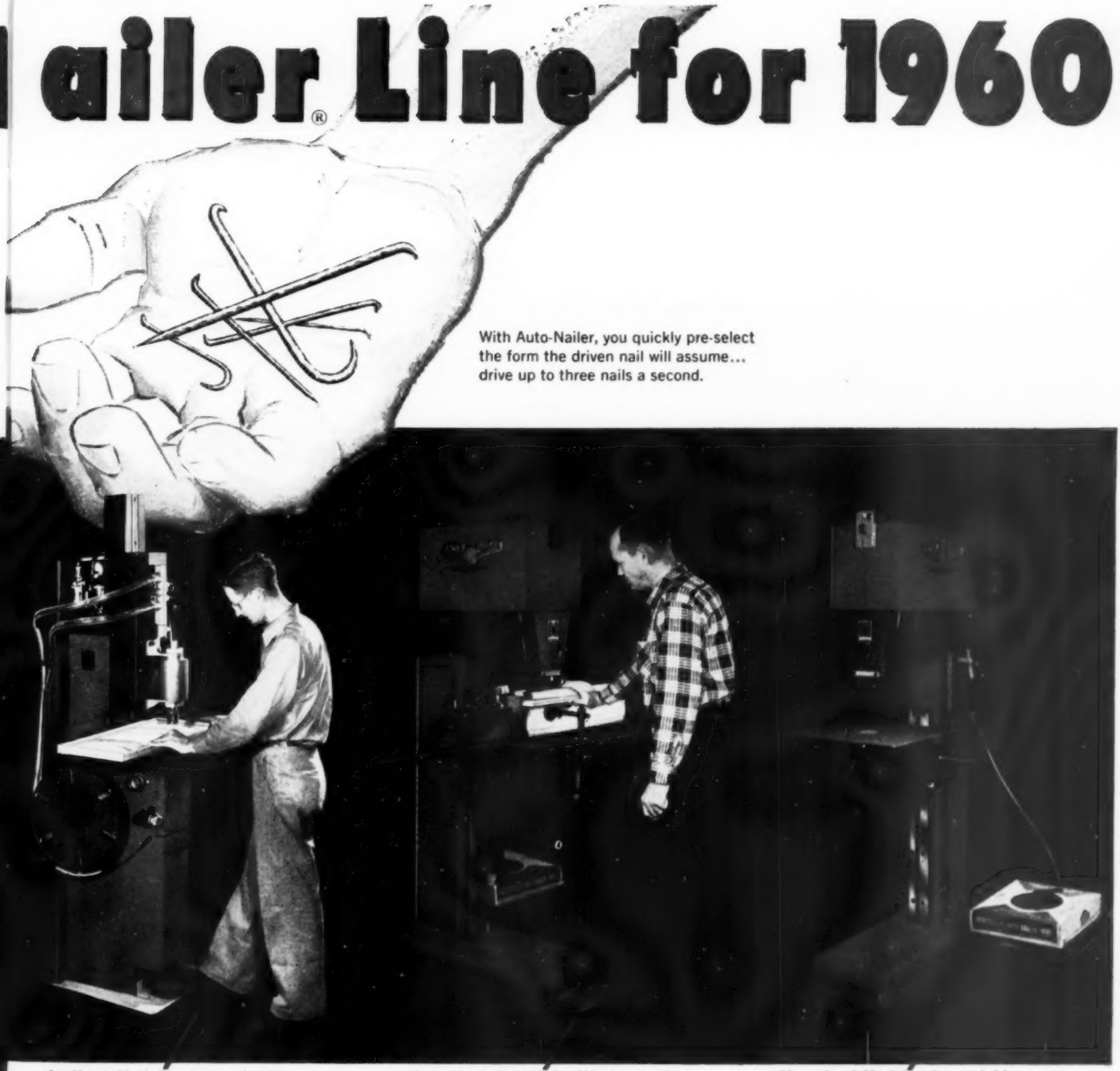




Banded table top —glue-nailed.

Glue-nailed molding—nails driven from bottom.

ailer® Line for 1960



With Auto-Nailer, you quickly pre-select the form the driven nail will assume... drive up to three nails a second.

Jupiter-5 Model makes and drives nails vertically from beneath. Nails are ¾" to 1¾" long.

Hercules-9 Model for Window Jamb Assemblies. Nails are ½" to 2¾" long.

Hercules-9 Model makes and drives nails from ½" to 2¾" long.

The Auto-Nailer representative in your area will be glad to tell you whether or not your product can be auto-nailed. If your product qualifies, he will show you how Auto-Nailers pay their own way and pile up profits for users. Write Auto-Nailer Company today for further information – no obligation.

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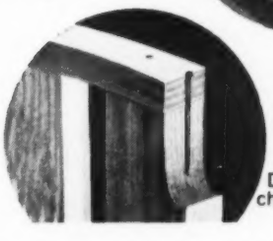
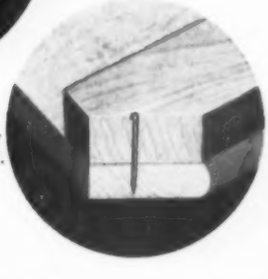
Wood window jamb assembly.



Dinette chair back.



Bed rail – slat bearer glue-nailed.

The Editor's Page

WE HAVE TO LIGHT FIRES!

Why light fires?

What happens when fire starts? Silly question, but the answer is significant. Somebody gets busy and puts it out. The "somebody" never would be spurred to action if the fire didn't start.

Maybe this is a simple explanation of why editors need to light fires. We aren't, believe me, hypocrites of the first order. It may seem that way, but unless some of us do more than eulogize tht industry and hold hands, we're going to all be left holding hands, or sticking them in our empty pockets!

(But before this "fiery editorial" starts, let me say that editors, too, need constructive criticism. So please write whenever you feel like it.)

Is the woodworking industry illiterate? Do we have enough good minds who can think in terms of better public relations and more public information? If you believe the answer to the first question is negative; and the second affirmative, continue reading and send us your reaction.

Here are two immediate needs.

Aluminum offers competition.

ALUMINUM—has offered competition before and will continue to do so. A Committee of Aluminum Producers launched its long-range program at the National Boat Show in New York City. Furthermore, they sang the second verse at the Chicago Boat Show and plan to use the third verse at San Francisco's exhibit in March.

Believe it or not, I couldn't even get a poster, nor publicity of any kind on wooden boats at the Chicago Show! But the gold-covered press kit from the Aluminum Committee was easy to obtain. Nelson Nash, contributing editor, had somewhat the same experience in New York.

The Aluminum Committee has extensive plans to "spread its story nationwide." There is a well-developed four point program to help them accomplish this.

How is wood better?

WATER LEAKAGE—Hidden in the columns of a recent issue of the *New York Times* is a report on curtain-wall construction with a thin skin of metal and glass. "These new buildings," says the article, "are extremely vulnerable to leakage caused by the expansion and contraction of the outer sheath. The result is that more than 70% develop leaks within a few years after completion."

Now, what do you think? Can various associations made up of the manufacturers of wood products do a better job of promotion, showing the inferiorities of competitive materials and emphasizing the strong qualities of wood. Should information such as that about water leakage be considered in the National Wood Promotion Program? Let us know what you think.

E. McDaniel
Editor

RESIN ADHESIVES by Catalin

. . . set the highest standards for QUALITY, ECONOMY and UNIFORMITY

• UREAS

formula	type	solids	use	for specs
802	liquid	46%	hot & cold press	AN-G-8, MMM-A-188, CS35-56
804	liquid	51%	hot & cold press	AN-G-8, MMM-A-188, CS35-56
812	liquid	65%	hot & cold press	AN-G-8, MMM-A-188, CS35-56
825	liquid	60%	hot & cold press	AN-G-8, MMM-A-188, CS35-56

• MODIFIED UREAS

formula	type	solids	use	for specs
IMPROVED WATER RESISTANT				
8690	liquid	60%	hot & cold press	MMM-A-188, CS35-56
CRAZE RESISTANT TYPE				
8688	liquid	90%	intermediate & cold press	MMM-A-188, CS35-56

• RESORCINOLS

formula	type	solids	use	for specs
729	liquid	57%	hot & cold press	MIL-A-397B
731	liquid	55%	hot & cold press	MIL-A-397B
738	liquid	56%	hot & cold press	MIL-A-397B

• PHENOLICS

formula	type	solids	description
8068	liquid	66%	Fast-curing water-soluble resin for particle board.
8297	powder	—	Fast-curing resin for increased flexural strength and moisture resistance, used for molded shapes of wood flour and particle board.

Since the introduction of resin adhesives, a little more than a quarter-century ago, Catalin's ability to develop and deliver the most modern types of resin with absolute uniformity . . . batch after batch . . . month after month . . . has won the highest regard of woodworking production personnel.

The versatile adhesives listed here, together with Catalin-developed accelerators, because they establish superlative levels of dependability, quality and economy, have found wide acceptance for both hot and cold press woodworking operations and products. Catalin field representatives are qualified to assist you in adapting these formulations to your specific requirements.

Fast deliveries from three strategically located plants in the East, Midwest and South — Fords, N. J., Calumet City, Ill., and Thomasville, N. C. — are a feature of Catalin's unsurpassed service.

Write for your free copy of "Catalin Adhesives," which describes all the types Catalin produces and contains a special section of practical hints on the successful use of urea resin adhesives.

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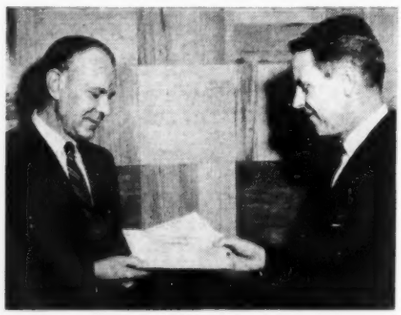
memo to MANAGEMENT

Wood Promotion Receives Help

New impetus was given the National Wood Promotion recently when it received its first contribution from a sawmill machinery concern officially opening the lumber industry's campaign for support from manufacturers and suppliers in allied industries.

The Corley Manufacturing Company of Chattanooga, Tennessee, presented a check for $1,500 and disclosed a plan whereby the firm will regularly send contributions to the NWPP based on the company's major equipment sales. A. J. Corley, Jr., president, said that the annual total of these checks may be as much as $5,000.



Mr. J. A. Corley, Jr., left, presents checks from his company totaling $1,500 to Mr. Thomas H. O'Melia, chairman of the National Wood Promotion Program's Intra-Industry Cooperation Subcommittee and vice-president of Scotch Lumber Company.

Corley's initial contribution marked the realization of an offer of voluntary financial support made 14 months ago following inauguration of the National Wood Promotion Program. It was the first received in the industry's initial test campaign soliciting support for its promotion program from manufacturers and suppliers in allied industries.

Particle Board Association

A new association has been formed. The National Particleboard Association has been organized with the following officers: D. C. Greeley, Silvatek Div., Weyerhaeuser Co., president; Richmond Gray, Gray Products, Inc., vice-president; R. L. Rinde, Roddiscraft, Inc., treasurer; and W. H. Cooke, Pacqua, Inc., secretary.

The major activities of the National Particleboard Association will be directed to the establishment of industry standards, the development of new markets and recognition of particle board by architects and the construction industries. The principal office of the association will be located at Washington, D.C. MacLeish, Spray, Price & Underwood, attorneys, Chicago, Ill., have been appointed as the association's legal counsel.

Nineteen companies are charter members of the association.

Adhesive Replaces Clamps

Moldmakers at the Refractories Division of the Carborundum Co., Keasby, N.J., are now using a quick-setting adhesive to replace clamps in the assembly of steel facings to maplewood molds.

Use of the bonding agent. Eastman 910 adhesive, to tack the steel facings in place is particularly advantageous where surfaces to be faced are at such odd angles (shown in the photo) as to make manual clamping difficult.

The steel facing plate may be hand held in position after the adhesive has been applied, and within a few moments a bond forms. Within five minutes the bond has sufficient strength to allow the moldmaker to drill through both materials and screw them together from the reverse side of the mold. The tips of the screws are then ground off providing a smooth metal surface. Prior to using the Eastman adhesive for this purpose, a complex clamping arrangement was necessary, costly in both equipment and labor.

Trade Association Meetings

March

10-11—Southern Forestry Conference, Hotel Robert Meyer, Jacksonville, Florida.

11-13—National Office Furniture Convention Meeting, Claridge Hotel, Atlantic City, New Jersey.

14—California Redwood Assn., 576 Sacramento Street, San Francisco, California.

17-18—Southern Hardwood Producers, Inc., Roosevelt Hotel, New Orleans, La.

23-24—West Coast Lumbermen's Assn., Multnomah Hotel, Portland, Oregon.

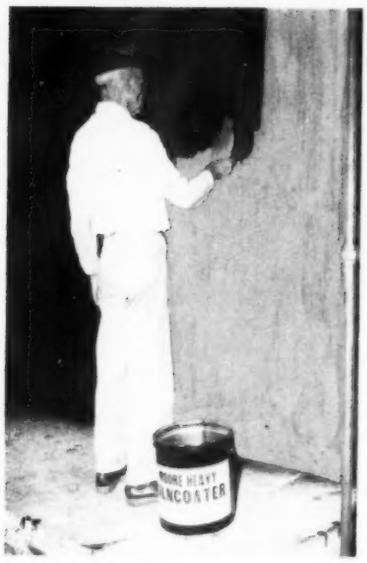
24-25—Forest Products Research Society, Statler-Hilton Hotel, Hartford, Connecticut.

April

4-6—Southern Pine Assn., Pearson Hotel, Chicago, Illinois.

4-6—American Ladder Institute Pearson Hotel, Chicago, Ill.

MOORE MODERN METHODS



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MOOREKILN PAINTS

Acid-Resisting — Reduce Maintenance Costs

Moore Modern Methods eliminate expensive repairs on your kiln by providing protection against the damaging effects of kiln temperatures, humidity and wood acids.

Moore Kilncoater was developed especially to protect wood or masonry walls, as well as metalwork around the kiln, against deterioration. This acid-resisting paint — applied now — will save expensive repairs later.

For positive protection and reduced maintenance costs, specify high-grade, acid-resisting Moore Kilncoater to increase the life of your kiln building and equipment.

Write today for more information and prices.

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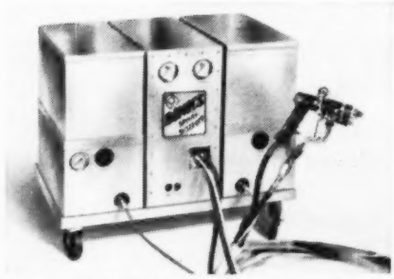
sprays or flows the new MULTIPLE COMPONENT MATERIALS for finishing, coating or build-up

Binks new TURBULATOR spray gun and FORMULATOR are a major break-through in the spray application of a whole array of catalyzed epoxy coatings and casting resins . . . polyester gelcoats and reinforcing resins . . . foam-in-place materials and other synthetic coatings requiring a catalyst.

Binks TURBULATOR gun may also be used for the flow-on application of plural component materials.

The FORMULATOR provides a self-contained reservoir for resin and catalyst materials. It accurately meters and proportions the flow and volume of each material to the TURBULATOR spray gun.

Operation is simple . . . only basic instruction is necessary.



Binks new TURBULATOR gun and FORMULATOR equipment package opens up vast new areas of finishing, coating and build-up material technology . . . for the first time really places this technology at your disposal . . . opens up exciting new production possibilities never before practical.

Send for Bulletin A-54-5
Learn the details of this remarkable advance in spray or flow applying new "miracle" materials.

Ask about our spray painting school
Open to all . . . NO TUITION . . . covers all phases

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Please Help Us Find

"We are in need of a ferrule 1⅝" in diameter and about 5" long. This should be a brass telescoping ferrule. We will need ferrules of this size in large quantities."
—E. O., MINNESOTA

"If you have a source for wood rolling doors, similar to the old roll top desks, please let us know."
—M. B., CALIFORNIA

"We are interested in finding a manufacturer of equipment to make golf tees."
—H. W., TEXAS

"Please advise us as to the manufacturer of automatic routers for cutting slots in solid louvered doors."
—G. E., MINNESOTA

"Who is the distributor of a bandsaw guide made in Switzerland? This guide could be equipped with a removable pattern guide inserted ahead of the saw blade. We have such a guide and need parts for it."
—F. W., WISCONSIN

"Who makes a bench planing machine listed as 'Red Fox?' I wish to contact the manufacturer and order parts."
—L. A., SOUTH AFRICA

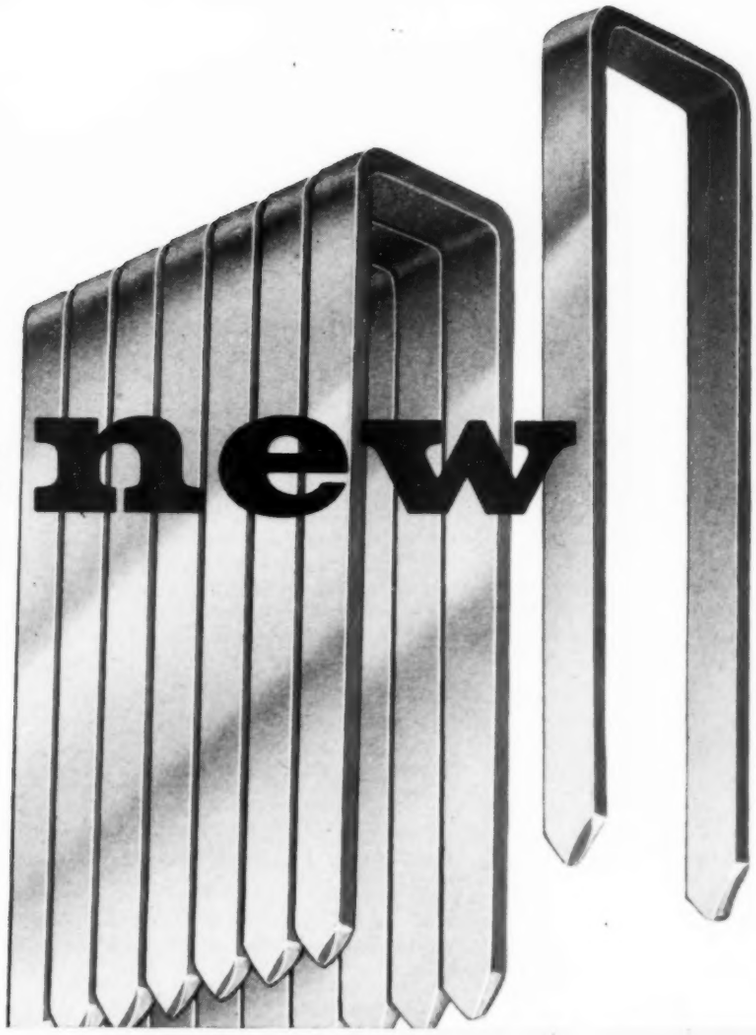
"We are looking for permanent markets for small mill operators who produce southern pine, rough kiln dried in 80%, B & Btr and 20C. This lumber is developed while cutting for box plants. Predominantly 7/4 and 4/4 thickness. Permanent industrial markets are needed to help these marginal mill operators as well as the savings that a purchaser can obtain by buying from this source."
—J. B., NORTH CAROLINA

"We are looking for a market for mixed southern hardwood sawdust —principally oak and gum, available in car loads or truck loads."
—E. J., LOUISIANA

"We would like information about the manufacturer of a Steven's profile lathe."
—D. B., ILLINOIS

If you can supply answers for any of these readers, please write the editor.

THE **new**



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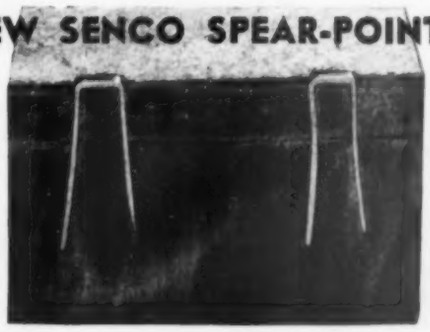
CONVENTIONAL CHISEL POINT

Note: Only average holding power.

NEW SENCO SPEAR-POINTED



Note: Legs spread to give maximum strength.

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SALES AND SERVICE IN ALL PRINCIPAL CITIES

W O O D Will Meet Tomorrow's Needs

F. K. Weyerhaeuser Reports on His Company's Progress

F. K. Weyerhaeuser
Chairman of the Board
Weyerhaeuser Company

"Our company's increasing production of new wood products is indicative of the changing face of the entire timber industry. New forms of wood are no longer recognizable as the traditional two-by-four!

"Gluing and jointing advances, including a three-finger joint announced by Weyerhaeuser in 1959 [and described in the feature article on the facing page], are strengthening markets for wood in competition with non-wood products. Pieces of lumber previously of low value are being processed at new plants which trim defects prior to end-and-edge gluing into Nu-Loc lumber of *any length, width* or *size*.

"A wood veneer and pulp board "sandwich" called Ply-Veneer was used in 1959 as a core for fiber glass boats and swimming pools. Missiles are being packaged in Ply-Veneer. Do-it-yourself blue prints launched this wood product into the homeowner market through retail lumber dealers.

"The history of the Weyerhaeuser Company in 1959 was typical of leaders in the industry. To indicate the wide range of products now manufactured, we dropped the word "timber" from our name in mid-1959, and adopted a new corporate identification symbol. . . .

"Plywood received increased emphasis in 1959. We began plywood production in a new plant and announced construction of additional facilities at an existing plant which doubled capacity.

"Hardboard, a pressed wood fiber panel, received new surface treatments this past year. Striated and grooved patterns, plus smooth, combed and colored surfacing have been applied for all-weather outdoor and indoor paneling uses.

"Our Silvatek division announced a floor underlayment performance guarantee for a product called Versabord. Made from particles of wood and wax bonded with resin, *the panels are more dense than oak flooring*.

"The forest products industry in the Pacific Northwest is growing and remains the number one payroll. Despite a possible drop in housing starts, the construction industry should realize a $1 billion increase in 1960 and lumber production will remain near 1959 levels. Plywood production will probably increase 10%.

"We expect industry growth to result from better utilization of each log harvested. More wood will be converted into products of higher value.

"Electronic and optical devices have been developed in lumber and plywood research laboratories. More accurate and efficient sawmilling is resulting from these measuring devices.

"Our new product research efforts were significantly increased during 1959 and we are continually testing new products of wood in the laboratory and market.

"Research has resulted in development of a moldable wood fiber called Pres-Tock. Pres-Tock is used for interior door panels, package trays and other automobile components.

"Research in our forests is resulting in development of tree growth stimulants, animal and insect repellents and genetic improvements that promise faster growing trees of higher quality.

"Wood to meet tomorrow's needs—that is our goal! The tools of modern science, including radioactive isotopes, will help us develop methods of growing this wood to supply tomorrow's markets in forms, shapes, quality and quantity, unknown today."

A Few Utilizations For Nu-Loc

Bevel siding
Board-and-batten siding
Board-on-board siding
Drop siding
Window frames
Exterior finish
Cornices
Rake boards
Soffits
Signs
Interior finish
Door jamb sets
Cabinet faces
Casing
Base
Molding
Shelving
Drawer sides and fronts
Stair trim
Window sills
Valances
Railroad car linings

Artist's drawing shows details of three-joint principle.

Weyerhaeuser's "Endless Plank"

By Bert Goldrath
West Coast Editor

Short pieces of lumber are upgraded by an average of 400% in a new finger-jointing and end-gluing facility at the Weyerhaeuser operations in Raymond, Washington. Activated only last August, the department has a theoretical maximum capacity of 90 lineal f.p.m., or as much as 40,000 board feet per eight-hour shift. The $200,000 installation, known as the Nu-Loc plant, occupies its own 10,000-square-foot area off the bundle chain lumber line and the shipping shed.

The Weyerhaeuser Company is the first to engage in production of three-finger joints, according to N. B. Hazen, manager of the Twin Harbors branch at Raymond. This method of production was the outgrowth of experimentation which convinced the company that there is not enough scarf in a two-finger joint. The advantage of a three-finger joint, Mr. Hazen said, is that it gives more strength on a thin edge.

As a practical demonstration during our recent visit to the Nu-Loc plant, he picked up a finger-jointed board off a stack, whipsawed it violently back and forth and bent it to a sharp curve. In no way did the end product display less strength than solid lumber, even though it contained several jointed sections.

Short pieces have traditionally been a source of waste and a sales problem at sawmills including Weyerhaeuser. Before setting up the new plant, this waste lumber threatened to become a serious problem: a force of 225 men was turning out an average of 175,000 board feet of lumber on each of two shifts.

The facilities at Raymond are among the largest in the industry, occupying more than 100 acres. Fir, hemlock and cedar are the chief species run through the finger-jointing operation. Currently the emphasis is on cedar for bevel siding;

Figure 1

Figure 2

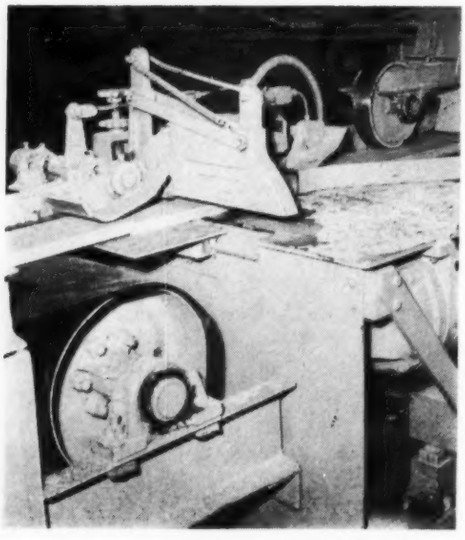


Figure 3

Incoming raw material (figure 1) is water-marked at the blank table and dropped onto a moving belt.

A chop saw (figure 2) cuts out defects when an electronic sensing finger passes over the water-mark.

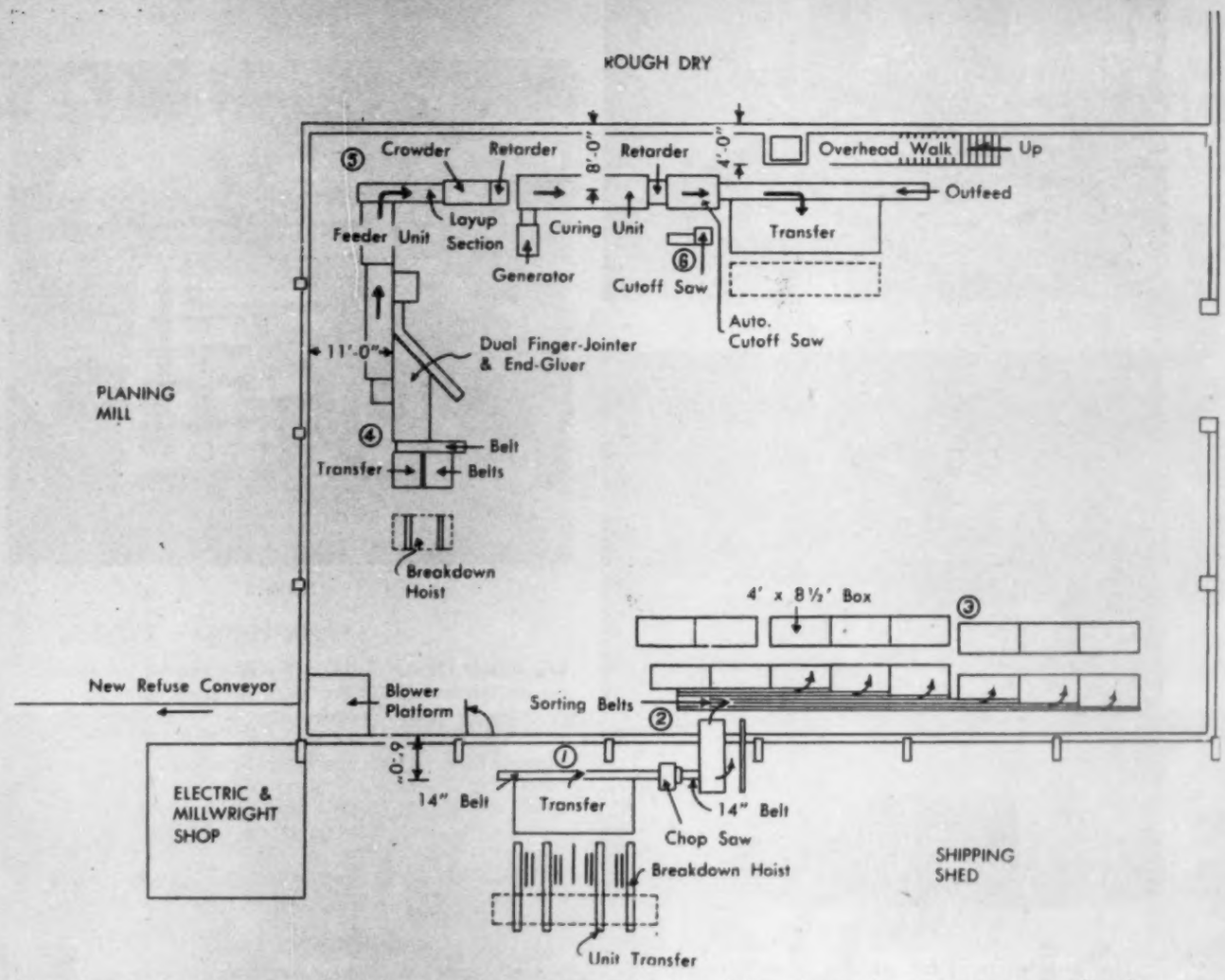
The grader (figure 3) takes pieces from a belt leading from the chop saw and drops them into one of six slots, by color and grain. Rejects are dropped onto the scrap conveyor.

it is resawn after finger-jointing. Since it is intended to be of a quality adequate for painting, the joints are invisible when the material is in place and finished. Door jambs and various types of molding and trim can be similarly produced.

Production starts in a corner of the 86′ x 120′ building. Raw material comes right from Weyerhaeuser's own sawmill. Previously these shorts had gone for chips or as hogged fuel–much of the wood had no real lumber value. Now, whatever is rejected or becames scrap in the end-gluing plant is diverted to the company's pulp mill. There is practically 100% utilization of wood, with even the bark being used as fuel.

Short pieces are sorted at the blank table on a 14′ moving belt. Material comes down onto the table from a hoist which is fed by a transfer chain loaded by a 100′ P&H (Pauling & Harnischfeger) bridge crane. On the blank table a man marks out defects in the wood and drops pieces onto a belt. An electronic sensing finger passes over the water-mark and actuates an Industrial Woodworking Machine Co. chop saw which raises by cam and neatly cuts through lumber up to 2″ x 12″.

The material continues on a crossover belt to a grader who sorts according to color and angle of grain. The pieces are already pre-sorted as to specie. Waste is dropped onto a conveyor line leading to a chipper.



Flow of materials and work at Weyerhaeuser's Nu-Loc plant. Refer to circled number in diagram and corresponding figure number under photographs to identify location of various operations.

Figure 4

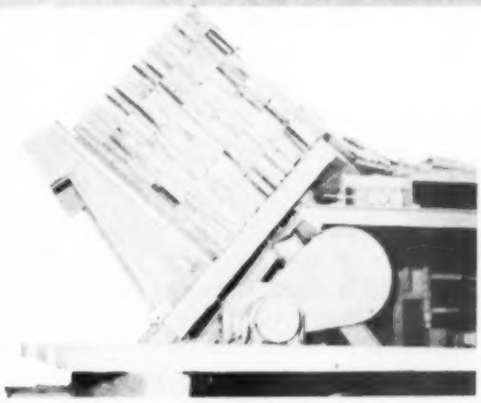


Figure 5

Figure 6

A moving belt (figure 4) feeds out from the six slots at the grader's station to a long loading table where boards are stacked in boxes which have pallet bottoms.

A finished load (figure 5) of one species is deposited on the breakdown hoist at the head of the tenoner line.

Short pieces (figure 6) are hand fed for squaring of ends and entry into male cutting head. Culling takes place here also.

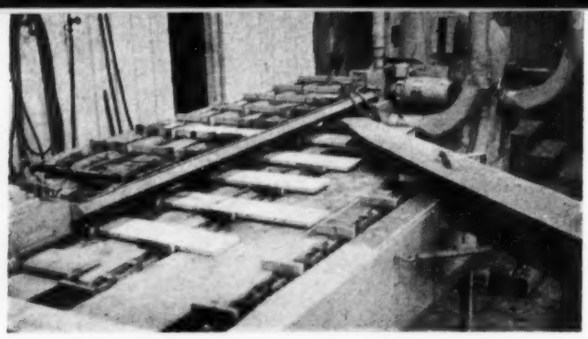


Figure 7

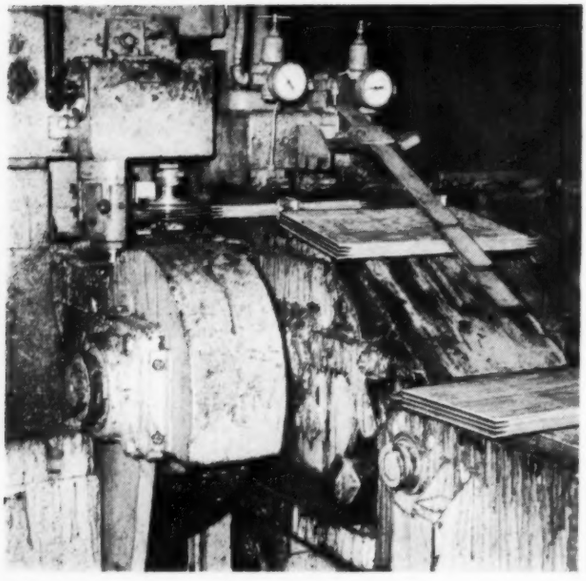


Figure 9

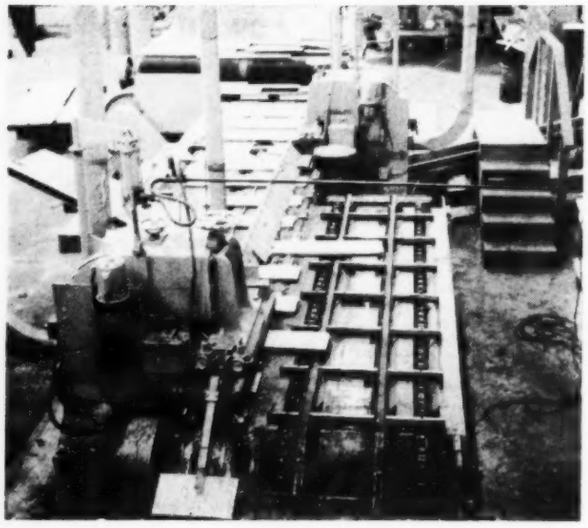


Figure 8

Lug chains (figure 7) carry pieces down for the second cut on the female cutting head. Rotating arms push pieces against a fence.

Shorts (figure 8) approach the female cutting head at lower left, after having male profile cut. View of whole tenoning equipment shows how boards are shifted from one side to the other.

This unit (figure 9) contains the glue spreading wheels. Melamine urea resin is applied to both kinds of cuts.

The arrangement for sorting is most unique and provides for six categories. The grader drops pieces of like color and grain into any of six slots which feed out onto a moving belt about 55′ long. Material runs from the six slots to individual compartments on a loading table. At this point pieces are hand-loaded onto pallets. Finished pallet loads are either run into storage or carried directly to a breakdown hoist at the head of the finger-joining line, all of which is equipment from the Industrial Machine Company.

Theoretically, pieces down to a minimum size of 1″ x 3″ can be finger-jointed, but it is uneconomical to do so because of the labor cost involved in handling so many small units. A rule of thumb applied at the blank table is that a piece should be at least a third longer than its width—otherwise it might tend to turn on the lugs in the tenoner. Insofar as thickness is concerned, pieces as little as ¾″ net may be processed.

Below the breakdown hoist, the feeder drops any imperfects that may have gotten by the grader, onto the scrap line. (Note how inspection is a continuing process all along the route.)

Shorts are laid manually onto the lug chain of the tenoner, which has an average speed of 50 f.p.m., although speed may be varied up or down. The speed of the drier further down the line governs the pace of the preceding operations.

Each piece is first square-trimmed in preparation for passing through the male tenoning head. Finger-joint cutting then is accomplished by a circular head with knives like those of a planer. The head is made up of a battery of untoothed knives, shaped like a sickle without a groove. They are tapered in cross-section.

One of management's biggest problems occurred at this particular juncture—the fact that species affect the speed of the operation. Some species run faster than others, while cedar is the most difficult in this respect because of its relative softness. However, it is a technological problem which yielded before modern engineering techniques.

After the male tenon is cut, a melamine urea resin is applied by a double wheel device integral in the tenoner. The boards are eased from right to left by an angled guide bar. A turntable (called a crowder) then takes over, shifting the board on the lugs by means of two rotating arms that crowd pieces against a fence in position for the second, or female cutting head. The cut made by the female head is not necessarily the mirror-image of the male cut. The difference, if any, may be very slight and measurable in thousands of an inch, depending upon the specie again.

Weyerhaeuser follows the principle of applying glue to the female joint as well as to its counterpart, on the theory that a stronger joint results if both members are glued.

Challoner No. 721 Double End Tenoner

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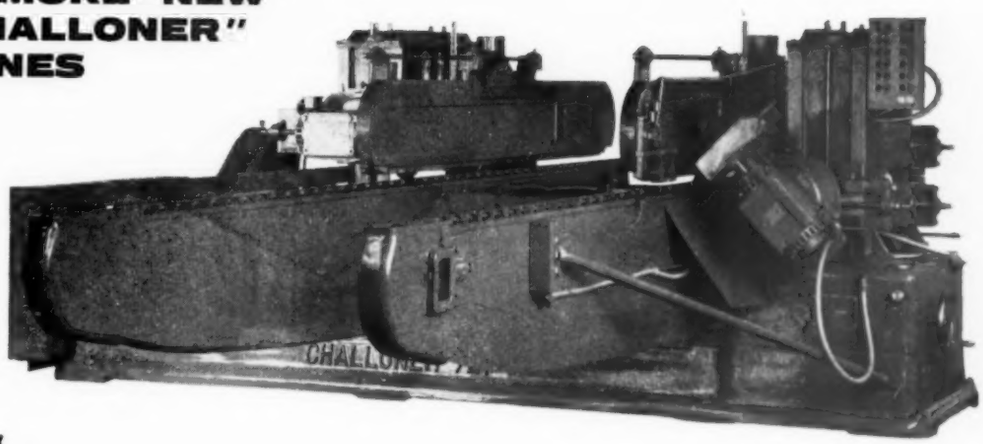

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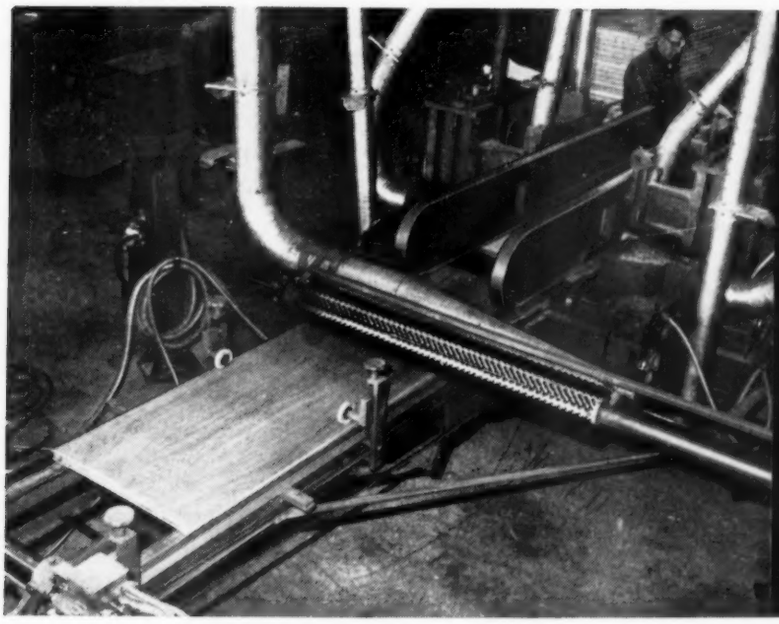

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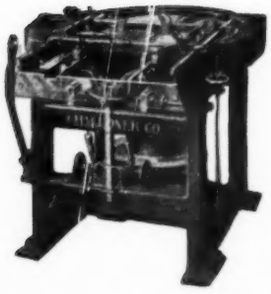

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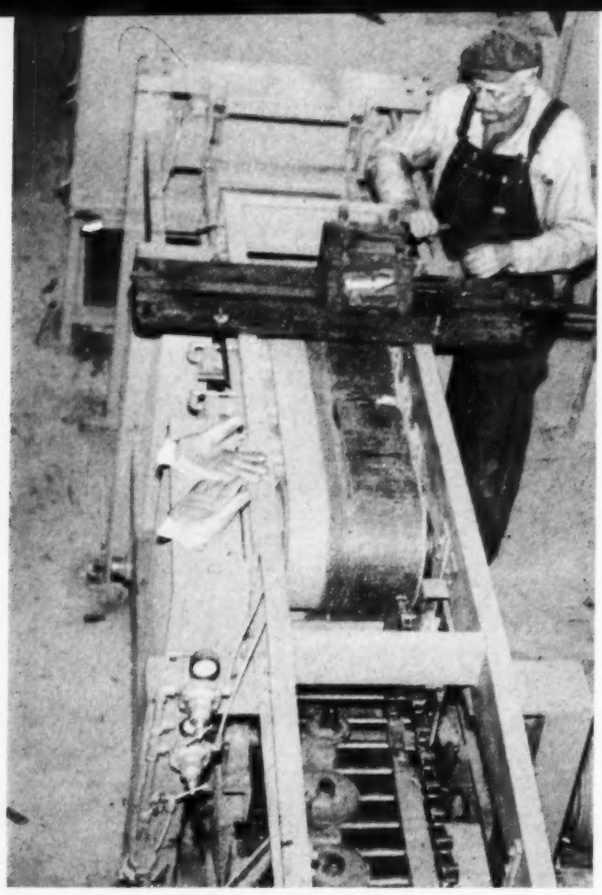

Figure 10

Joints in these pieces of Nu-Loc are almost invisible.

Cut and glued on both ends, boards then are carried by the lugs into a retarder section where they are loaded continuously against a straight edge by hand. Here, once more, the feeder tosses rejects onto the moving scrap line. Such persistent culling results in the highest quality end product.

Through the layup section, the crowder and retarder, the pieces now are a continuous board, or "endless plank" as the title implies. The next station is a Mann-Russell electronic drier powered by a 20 kilowatt generator. The electronic impulse in the curing unit instantly dries the joints. As the endless board emerges from the drier it is cut to a pre-determined length by a Mann-Russell traveling automatic cut-off saw equipped with limit switch. Lengths handled are up to 20′.

From the outfeed rolls, finished boards are stacked on a transfer table. The culling-out process continues even here: defective sections are cut out on another cut-off saw.

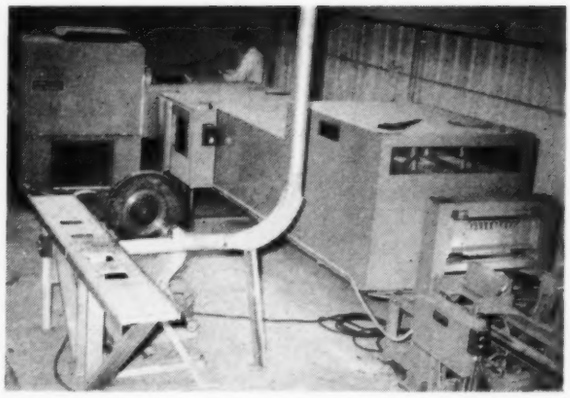

Figure 11

Mann-Russell (figure 10) curing unit is being setup for a new run.

Looking at the outfeed end of the electronic glue drier (figure 11). Integral automatic cutoff saw is at right; cutoff saw for removing defective sections is at left.

While the plant at Raymond, Wash., is the newest and most up-to-date of Weyerhaeuser's Nu-Loc facilities, it is not the only one operated by the company. Nu-Loc was pioneered at the Longview, Wash., branch. To date, four Weyerhaeuser branch plants are producing Nu-Loc: at Longview, at Raymond, at Klamath Falls, Ore., and at Springfield, Oregon.

End- and edge-glued wood products are turned out at the company's Springfield and Klamath Falls plants. At the latter shop an innovation is an electronic moisture detector developed by Weyerhaeuser's Tacoma engineering department. Pieces scheduled for processing move past a set of whiskers which transmit a continuous flow of electrical current through the moisture in the wood itself to a metal plate on the opposite side of the piece. When a piece with higher-than-permissible moisture content is detected, a red light glows on the device and the piece is automatically marked for hand-cutting.

Principal products now being turned out under the Nu-Loc brand in the various Weyerhaeuser plants include siding in a choice of species, grades, patterns and lengths to 16′, as well as water-repellent siding; counter-top and cabinet lumber up to 28″ wide; door jamb sets of sides and header, with sides dadoed to receive the header; casing, base and molding up to 24′ long, and S2S finish lumber in several species and any fractional width to 28″.

With better-engineered finger joints, Nu-Loc products are finding their way into new fields wherever structural strength is not a factor. □

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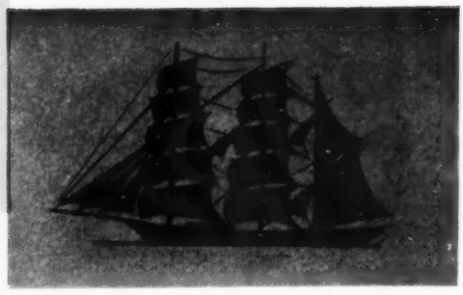

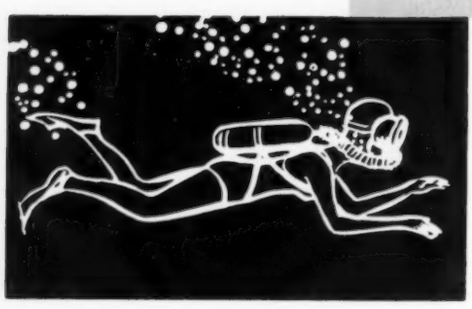

Nelson Nash Writes An Article In The American Hardwood Series . . .

THE WHITE OAK FLYING DUTCHMAN

A Legend Come True . . .

I, Alba Quercus, am a girl who loves skin diving, and I look good even in flippers, face mask, skin-tight rubber suit and aqualung.

One fateful afternoon my friends and I sailed far out to sea looking for submerged treasures. Although the water was a little choppy, we were not afraid and we felt perfectly secure because our little outboard cruiser was made of wood, which is naturally best for boats.

The frames, keel, keelson, stem, knees, floor beams and all other structural parts consisted of specially selected clear white oak, one of the world's strongest woods.

I am not really too interested in technical details, but I did overhear my boy friend Rift say that white oak has its own built-in waterproofing. It seems the pores are filled up with a frothy, wax-like substance called tyloses (I called it goo), which makes white oak waterproof or something, and that of course makes it ideal for boats.

I was the first one overboard, going down, down, down. Suddenly, a huge shadow appeared overhead, blackening the sea around me. I felt myself caught in a net and hauled up, up, up.

Near the surface my body bumped against the side of a strange sailing craft. Even in the darkness

I could tell the planking was white oak, because of the characteristic irridescent veins in the wood texture. From the corner of my eye I saw the name of the vessel: *The Flying Dutchman.*

I was unceremoniously dumped on the white oak deck. All around me were vicious looking pirates—Hollywood extras on location—so I thought.

But not for long. Something went wrong. They must have thought I was a fish, because they descended upon me, brandishing knives set in white oak handles, shouting, "I want the drumstick!" and "I want a wing!"

I was horrified. But suddenly a few shots rang out. Several of my tormentors dropped dead. There was a dreadful silence, while my eyes traveled along the deck, up the white oak stairs to the bridge with the white oak carved railing. Then I saw him. None other than the great, magnificent, virile, legendary captain of *The Flying Dutchman* himself, gun still smoking in his hand.

He motioned me to follow him into his cabin. The captain was obviously a man of distinction and class, because his quarters were paneled and furnished in aristocratic white oak, just like the visitor's gallery at the New York Stock Exchange, and everybody knows that the Wall Street boys can afford the best.

"Forgive my men," he said, "they are barbarians. But on the other hand you will agree that in this outfit you are wearing you look more like a fish than a girl. Let me now introduce myself . . ."

"No need," I interrupted. "You are the mythical captain of *The Flying Dutchman*, doomed to sail the seven seas until a maiden plights her troth to you and is faithful to you for a whole year. Richard Wagner wrote an opera about you. And the devil himself blessed your vessel so the wood will never rot."

The captain smiled sarcastically, "Pish Tosh! You mustn't believe everything you hear in operas, my dear. I needed no Devil to bless my vessel, because it's made of white oak, which is nearly indestructible. Besides, we are usually sailing in salt water."

The captain then told me an absolutely fantastic story that boat hulls decay more rapidly in fresh than in salt water. Also, ships decay faster when they are laid up, because inactive ships ordinarily are moored in water containing less salt than when in sea service; and stale, motionless air is conducive to decay.

Just to make conversation I asked, "Then why do boats rot at all?"

It was a smart move on my part. He became extremely friendly, because there is nothing a man loves more than to explain some technicality to a pretty girl.

He said, "Decay of wood—any wood—is directly related to the moisture content. That's why it is so important to use dry, preferably kiln dried wood. Always remember that no wood species decays if the moisture content is below 20%. Whenever somebody reports decay in wooden ships, it will usually be due to the fact that green lumber has been used. This would be lumber that had had a moisture content of 20% or more. In such cases the decay infection was there before they even started to build the boat."

I asked triumphantly, "Ah,—but aren't you contradicting yourself? After all, even if the moisture content of a wooden boat hull is below 20% when it is new, doesn't the moisture content become higher when the boat is put into the water? And doesn't this increased moisture breed decay?"

Instinctively I knew that this was a stupid question. But I also knew that gentlemen prefer girls who are not too bright. My trick worked. The Captain replied tenderly, "My dear, how clever you are. What an intelligent question! What would you think of me if I were to tell you that underwater hull planking whose inner face is exposed to normal air circulation from the ship's interior acquires an average moisture content of only 13%. This is how it works. The outside of the boat absorbs moisture from the sea. Yet, inside the boat the moisture evaporates as fast as it is being absorbed. Besides, white oak—as well as mahogany,

IN THE YEAR 1000 A.D. LEIV EIRIKSSON SET SAIL FROM NORWAY FOR GREENLAND - BUT WAS BLOWN OFF HIS COURSE
GREENLAND
NORWAY
LABRADOR
VINELAND
AMERICA
EUROPE
LEIV EIRIKSSON WAS THE FIRST CHRISTIAN TO SET FOOT ON THIS CONTINENT AND HE NAMED IT VINELAND

This beautiful mural was designed and painted by Cliff Young for the Norwegian Children's Home, Brooklyn, N.Y.

cedar, and Douglas fir, which are also used for boats—absorb moisture at a very slow rate. That's why wooden boats are safer, because they have built in buoyancy."

"Wood is really a marvelous material," I cooed, "tell me more." I was determined to sit through a long lecture on white oak, just to make him fall in love with me. According to the legend this was the only way I could save him.

He then told me that white oak is strong, beautiful, durable, versatile, plentiful and adaptable for peace and war.

Since the beginning of history, white oak has been one of man's best friends accompanying and fighting with him side by side. Phoenicians, Egyptians, Greeks, Romans and later the Portuguese and Spaniards used Mediterranean oak to build their ships. The Vikings, under their fearless leader Leif Ericson sailed and rowed their way across the Atlantic circa 1000 A.D. in 70′ long oak boats and discovered the American continent.

They landed on New England's coast, near Martha's Vineyard. And when they landed, they did not idly parade on the boardwalk, eat taffy or play pinball machines. No, these virtuous Vikings went right into the woods, sharpened their axes and harvested a cargo of prime white oak logs, after studying the latest forest utilization recommendations available at that time.

Now that was not what I had in mind at all. This conversation was heading the wrong way. I wanted him to make love to me and not to any white oak. Right now, I cared nothing about Columbus, Magellan, Francis Drake, Captain John Smith, Henry Hudson or the *Mayflower*—all of whom owed their fame to white oak.

To change the subject, I slid gracefully to the white oak floor faking a fainting spell.

Well—did I have fun! The Captain was beside himself with worry. The whole ship was in an uproar, and they carried me into their "hospital."

When "Doc" arrived he ordered everybody out of his white oak paneled professional office. Then he sat down on my white oak hospital bed and said, "You can open your eyes now. I know what's the matter with you."

"Oh, do you really?" I tried to sound very weak.

"I do indeed. The skipper has almost killed you with his incessant talk about white oak. Right?"

There was no use pretending further, and I decided to let Doc in on my scheme. "Look Doc, I want to help him—to save his soul. But how can I if he is always talking about white oak. Tell me, Doc, why is he so obsessed with this subject?"

Doc's face suddenly became very grave and mysterious. "I will tell you the secret of *THE FLYING DUTCHMAN* and why we are all here. But you must promise never to tell a living soul."

(To be continued)

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Century Furniture Co., Hickory, N. C., believes that there can be no compromise with quality materials in the hands of skilled craftsmen. This Cameo dresser and mirror are typical of Century's fine furniture.

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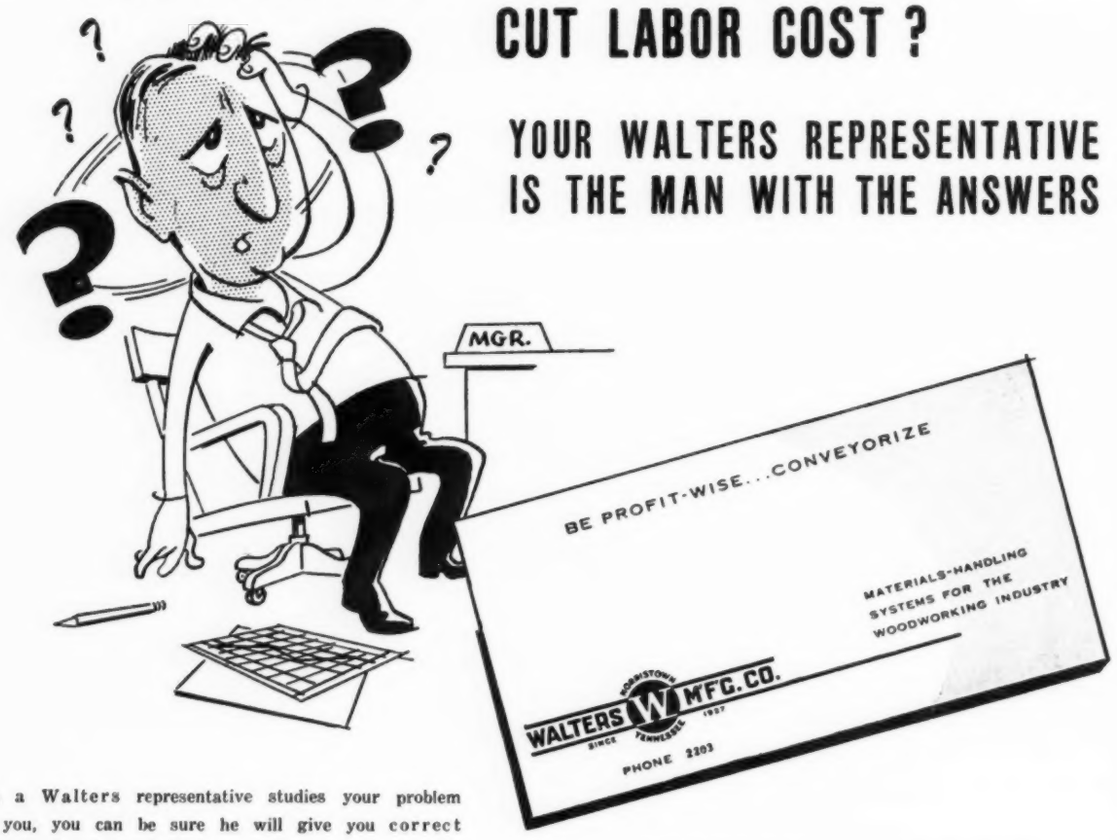

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An Interview with E. H. Lane

Reported by Darrell Ward
Engineering Editor

EDWARD HUDSON LANE was born at Newcastle, Virginia, on July 4, 1891, a son of John E. and Ella Florence (Wiseley) Lane. He attended school at Fork Union Military Academy and Virginia Polytechnic Institute. On October 7, 1914, he was married to Miss Myrtle Clyde Bell and they have four sons—Edward H., Jr., Landon B. and Bernard B. are now active in the management of the Lane Company, and John H. is a medical student at Duke University.

Mr. Lane is chairman of the board of the Lane Company of Altavista, Virginia, manufacturers of Lane cedar chests, occasional tables and furniture. Mr. Lane and his father founded this business in 1912, then known as the Standard Red Cedar Chest Company, and did business under that name until 1922 when its name was changed.

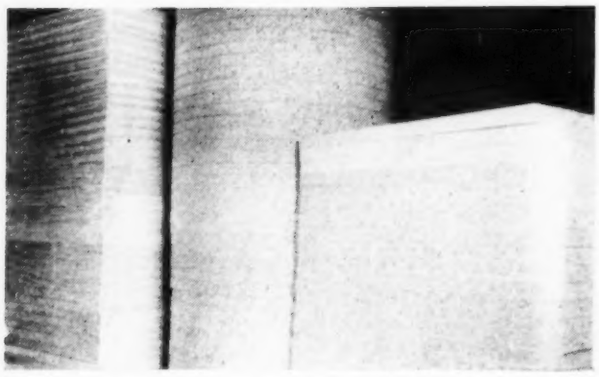
He is a trustee of the Lane Memorial Methodist Church, a member of the Masonic Blue Lodge, the Virginia Manufacturers Association, the Southern Furniture Manufacturers Association, the Furniture Club of America and the board of governors of the American Furniture Mart of Chicago, Illinois. He was elected furniture industry "Man of the Year" in 1951. He has been a member of the Business Advisory Council of the Department of Commerce since 1941.

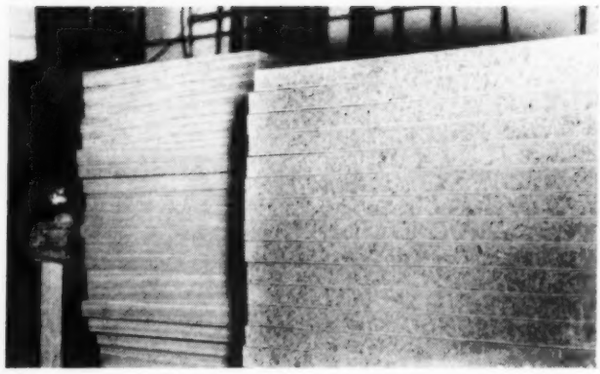
LANE PIONEERED PARTICLE BOARD DEVELOPMENT

While many people in the woodworking industry assume that particle board got its start just before World War II, we might credit the original idea to E. H. Lane of Altavista, Virginia, as far back as 1922. Since Mr. Lane initiated research and development independent of anyone else who later became identified with particle board, he actually pioneered particle board in the American furniture industry. He had made particle board years before people from Germany announced their "new development." For these reasons, we felt that a comprehensive interview with Mr. Lane would be informative to all concerned. This is the way he tells the story:

"We were the first in the furniture industry to use particle board, but the material was far different from what it is today.

"Until 1922, we made solid red cedar chests. The entire chest was solid material, interior and exterior. Then some of our competitors introduced hardwood exteriors with ¾" cedar inside. This required a 5-ply top. We became interested in possible ways to make 5-ply tops and what kind of core would be good for the purpose.





These pictures show thick Lanewood core before and after being edge banded. Stack to the far left in each photograph is Lanewood after edge banding.

"We employed Arthur D. Little, a research chemist up at Cambridge, (Mass.) to see what could be done with our wood waste. We weren't at all happy about burning it, and thought the chips could be bonded together to make a board.

"In those days there were no synthetic adhesives —only hide glue. So, using what was available, we came up with a board that cost about $200/M. We could buy poplar lumber for $18/M! We threw out the idea for the time being.

"Along about 1937 or 1938, people from Germany announced new synthetic adhesives. We experimented with these and finally got a pretty fair board developed by 1939 or 1940. Government priorities on synthetic resins cut off our supply, so we stopped again.

"After World War II, Virginia Polytechnic Institute began some research in conservation for the Tennessee Valley Authority to get best timber utilization for this area. Dr. E. George Stern of VPI worked on the project and checked around to see who would cooperate. The TVA wanted to turn over their work to anyone who would carry the ball. A number of people turned down the idea, but we decided to try it.

"Dr. Stern had worked out a high density board, formed under high pressure and high temperatures, without any kind of resin. But it was as heavy as pig iron. He developed other boards, one with urea formaldehyde and another with phenolic resin. We thought these were good.

"So, at this point, (1946) we added what he had discovered to what we had discovered and set up a little pilot plant. We made board and used it in the tops of two cedar chests.

"Our raw material was all red cedar dry waste bonded with urea resin. We used this core material in those two items for a year or two without mentioning it. We wanted to gain practical experience from the use of the particle board without any preconceived notions from people using the chests. If we had said anything, our competition would have made capital of the fact that we were putting wood waste in our cedar chest tops.

"In 1949, one of our competitors did obtain one of these chests and cut into the top. They made a lot of noise at the show that year saying, 'No wonder Lane can make chests so cheap. They make them of scraps!'

"That put us on the spot. All we could do was fish or cut the bait. We immediately announced the particle board core top as a special feature. It actually did warp much less than solid poplar core. And we had no starved glue joints to telegraph through face veneers.

"By that time, poplar was up to $55 to $60/M. Labor and manufacturing added enough to total about $130 to $140/M for a poplar core. The particle board core cost only about $100 to $110, a real economy.

"We made board at that time in a multi-platen press. We had developed three or four pilot plants, one growing out of the other, as we experimented and continued with a moderate production of material.

"In late 1949 or 1950, we felt there should be a better system. Our engineer, Johnny Crafton, and I went over to Germany to see what they were doing and, perhaps, to purchase some hot-plate presses. They were selling presses in Germany much cheaper than here in the States. We bought two—one for plywood and one for particle board.

"We had thought of buying a complete particle board plant because Germany had moved along in the industry. We studied their system with its mat laying, prepressing, conveyor system, hot pressing, automatic loading and unloading. But their method of producing board was not quite what we wanted. The board was not uniform in thickness and den-

sity. Soft spots and dimples would telegraph through face veneers.

"We decided against this system and merely bought our 5-opening hot presses. We were going to lay our mat and hot press it without prepressing. The trouble with this idea, however, was that we were using a wide variety of material. We used cedar, mahogany, oak, poplar and anything else which happened to be handy. That made it difficult to obtain uniformity of any kind.

"A mat laid at 4" deep might press out to ¾" sometimes or 1¼" at other times. If it turned out too thick, we had to dress it down and throw away the waste, resin and all.

"One day I was discussing this problem with Johnny Crafton and I said, 'Johnny, there is one thing that keeps bothering me. I feel that this material ought to be made by an extrusion process. I don't think it should be too difficult.'

"I could visualize two hot plates, one on each side, with a ram forcing chips through so we could get uniform thickness by the spacing between the plates and probably uniform density because of the controlled pressure on the ram. That would eliminate our problems with mixed wood species.

"Johnny agreed. We took some old hot plates from a veneer drier and built up a crude extruder. It worked. We got a fairly decent board which proved my theory. We decided to have a 2' wide press made. We ended up with a machine which would take two or three days to change board thickness!

"All this sounds rather primitive now, but it did prove we could make a good board by the extrusion process.

"We brought in an English engineer, Ralph Bibby, who worked with our mechanics to get our machine into good working order. I told him, 'Ralph, you've proved the principle by making a crude machine work. You've had plenty of experience in machine designing. Let's put our heads together and find the best hot-plate press manufacturers and go on from there.

"Adamson-United of Akron, Ohio, were the people we chose. They had had a lot of experience in the rubber industry.

"The design and development ran for about two years before we got our first extruder from Adamson-United in February of 1954. It was an extraordinary accomplishment for an entirely new machine performing a new function without experience behind it, but it accomplished everything we intended: we got uniform density and thickness with a variety mixture of raw materials.

"When we were about two-thirds along the way with the development of our machine, the Germans came up with the Kreibaum vertical extruder. Ours was a horizontal. The vertical machine does have the advantage of being able to produce hollow cores to make a lighter board because of the way the chips fall into place. We have never been able to do this. But the vertical machine has a number of disadvantages we don't like. For one thing, it requires three floors of a building because of its height. And some installations bend the board around a curve into a horizontal position before it is cut off. That makes the board craze or fracture, producing considerable waste after cutting out the defects.

"Before we were fully aware of these disadvantages, we tried to make Kreibaum a proposition. We offered him $50,000 for his idea just to let us combine his features with what we had. The old gentleman didn't like our proposition. Eventually, some banker took over his operation anyway. If we had waited long enough, we would have been able to deal with the banker, and the whole picture would be different now."

• • • •

This pioneering history was enlightening, but we wanted to explore more specific problems involved in the operation of Mr. Lane's equipment. Here are some of the questions we asked:

How does one regulate the mix when dealing with a variety of raw materials?

"It makes no difference," he said. "You don't need to regulate the mixture of wood particles in a Lanewood extruder. The ram is driving the material between two fixed surfaces and there is the same pressure at all times. So, as long as the particles are of the right size and the adhesive is properly blended, you get uniform density and thickness."

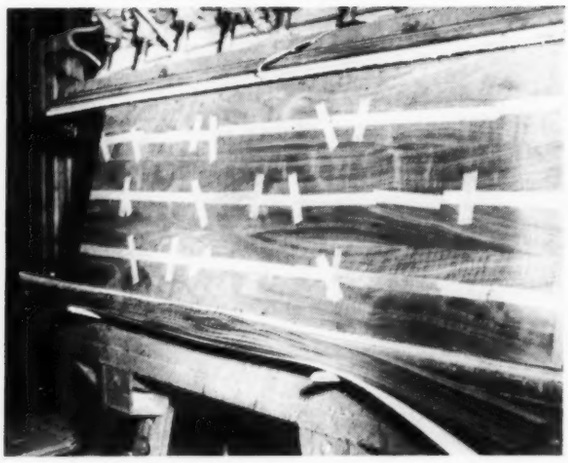
What about similar claims made for other types of boards?

"I'm sure there are some processes on the market that fit some uses better than our product, but all we started out to do was get a satisfactory core for plywood, a core of uniform density and thickness. We didn't know we would ever sell one of these machines or find that other manufacturers would want one."

How did the Lanewood process become introduced to the industry?

"It was after we were successful in building the machine and using the product that Bibby and Adamson-United persuaded us to set up some royalty arrangement and let them make the equipment for other people.

"We made agreements. They started building and have sold a dozen or more by now. Today, the



Panel in veneer edge press where edge veneer is bonded to panel sides. Paper tape is used for hand inlaying of "bow ties" and will be sanded off after pressing operation is completed.

Panel (right) with edge veneer attached to the sides, thus covering the Lanewood core.

machine is selling for something around $100,000. Our first cost us about $70,000 over six years ago. They did a magnificent job, especially considering it was the first. It is still running as good as ever. We've bought another so we can have two machines to cushion against an emergency."

What production satisfied your needs?

"We make about 80,000 bd. ft. of core stock per week in 13/16" thickness, our standard for 5-ply tops in chests and tables. In some of our furniture lines we make the board 1½" thick to give a more massive appearance to tops and end panels. This is a new trend in contemporary styling."

What economy is effected by using particle board in heavy sections?

"It would be unfair to particle board manufacturers to compare our costs with theirs because we do not have all of the costs in our setup that they might have in theirs, such as selling, higher overhead, etc.

"A typical manufacturer who must include all his investment in equipment, overhead, sales costs, labor, material and materials handling, and other such factors will quote something like $140/M. This compares favorably with ¾" poplar core at about $200/M. Some may be making lumber core a little cheaper, but there is a wide differential between lumber and particle board regardless of how cheap the lumber core or how expensive the particle board."

How does present day board compare with the earlier days' product?

"The board we made with the multi-platen process was never as good as the board we make in the extruder. Besides the soft spots and dimples in the multi-platen board, it warped just as badly and, if anything, sagged more than extruded board.

"On the other hand, you must remember that extruded board is weak lengthwise making it tend to sag if unsupported. This is just like learning to live with your wife. You work with the problem and learn how to overcome the weak points and make best use of the strong ones. With extruded board, it is a simple matter of cross banding and proper bracing or supporting. And we make everything a balanced, 5-ply construction."

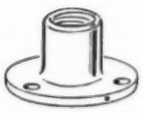
How do you balance with dissimilar veneers on face and back sides?

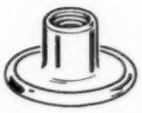
"This depends on the face veneer and its pattern. If you have a diamond matched veneer pattern, for instance, you have to underlay this with a similar pattern of cross banding.

"The interior veneer for cedar chests is always cedar. This is cut thicker than hardwood veneers. It has a tendency to draw up a little on the inside, but as long as this reverse cupping on a chest top is no more than about ⅛", it is really an advantage. It enhances the appearance. There is no problem

THE FIRST TEENUT was developed by Carr Fastener nearly thirty years ago. Since then, literally hundreds of special-purpose variations have been designed to meet the particular requirements of the woodworking and metalworking industries.

Mounting the standard, pronged Teenut is extremely simple. Drill a hole the same size as the Teenut barrel and hammer in the Teenut so that its prongs penetrate the wood and provide positive anchorage. Counter-boring permits completely flush mounting. Other types of Teenuts are available for anchorage with nails, screws or . . . in metal . . . by spot-welding.

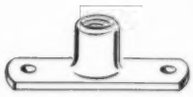


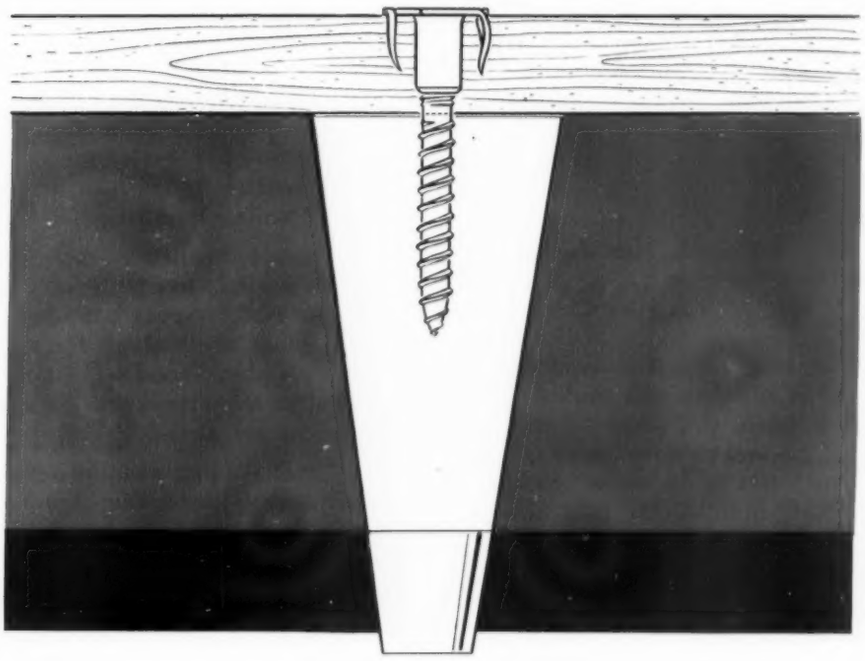


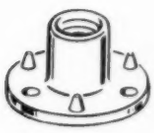
DOT®

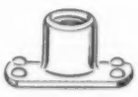
TEENUTS®★

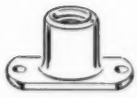
★*The name TEENUTS is a registered trade mark of United-Carr Fastener Corp.*











A wide range of thread sizes, barrel lengths and flange configurations permits tremendous versatility of application. Special types can be designed and produced in volume. For *completely blind* applications, Dot's unique Petal Nut is available in the 1/4-20 size and is being tooled for other sizes.

For further information, write for Engineering Data Catalog, Section E.

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Piece in the "Bow Tie" group. Note number of thick panels used in this construction.

with fitting because a chest is equipped with a spring lock catch so when you push down on the top to make it latch, you press on the top hard enough to put the sealing strip under compression. This sealing strip retains the cedar aroma and protects the contents from insects, dust or other contamination."

Why do you prefer sliced veneer for cross banding?

"We can get a smoother and much nicer cross banding with sliced veneers. We slice our own poplar cross banding because it is difficult for us to buy. We do buy some rotary cut cross banding for straight cross grain use. But sliced veneer is much easier to match up. When we have a fancy matched face veneer, we have to match the cross banding to the same pattern."

Would flakeboard or some of the other special boards be better cores for these cases?

"We don't feel that flakeboard offers any significant advantages as core material. Flakeboard has a number of attractive features. It is a better board for direct finishing. Others are even better, but are so much more costly than anything suitable for our purposes. All we are interested in is a good furniture core.

"We use all kiln dried material. This consists of wood waste from all operations throughout the plant. We don't have a drier in our system. The waste material includes end trimmings, edgings, grading offal, and general scrap. This all goes to the hammermill for conversion into chips.

"The chips are screened to separate the coarser particles which go back to the hammermill. Dust is removed because it absorbs too much adhesive. Screened particles are stored, measured and blended with urea formaldehyde for the extruder. It is almost as simple as it sounds. So, you see why we are not too concerned about the finer features of high-priced special boards which would do little more than add cost to our products."

What is your outlook for the future in particle board?

"As a core for furniture plywood, particle board is fully accepted by the industry. There are no failure problems with any good board now. We can produce a better piece of furniture plywood with particle board core than we can with lumber core. No one questions this fact any more.

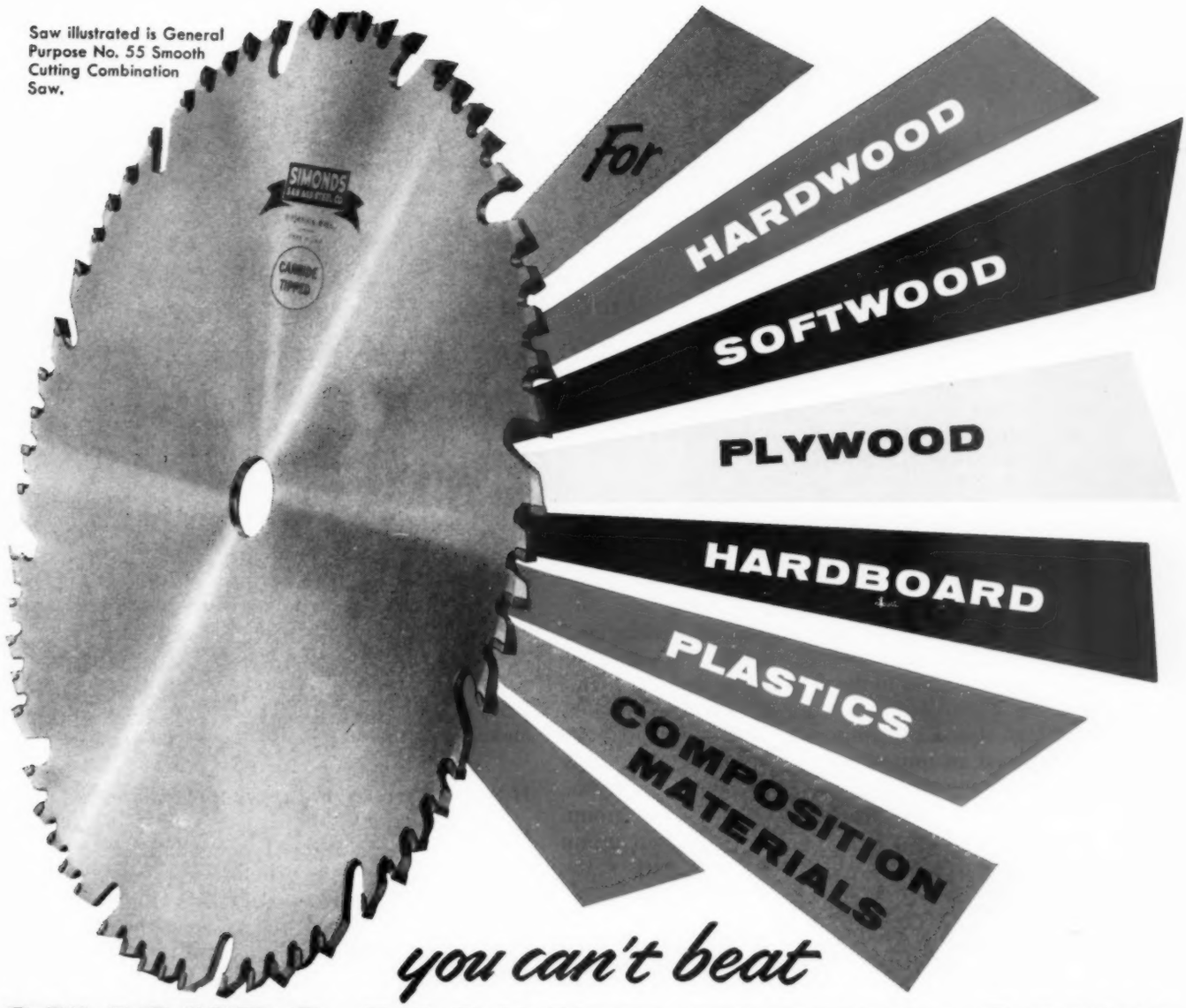
"Particle board has made a great contribution to conservation, too. I recently asked the head of forestry at Syracuse University to tell me what we are going to do about the raw material supply in this country. Wood technologists tell us that technical developments will take care of that problem and we are already pointing the way.

"I believe that with the developments we've made in particle board, the improvements in all particle boards in general, and the new Cultured Wood program at Kroehler, pretty soon there will be practically no standard lumber being used, except for exposed solid parts."

Will significant improvements come in particle board itself, or in its utilization?

"In both. To obtain a more acceptable board which does not need to be covered up with veneers, we will have to have many minor improvements. The acceptance of particle board in the building industry will come with other improvements and increased merchandising. And it looks as if structural and artistic utilization of particle board or plywood with particle board core will become more and more important in contemporary design."

Do you think a self-supporting extruded board will be developed?



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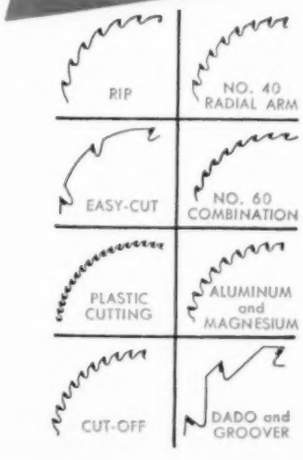

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"I don't know. The fundamental thing is that we are primarily interested in core material for furniture. If we go too far afield, we would neglect our main business. This development would be technological, outside the furniture industry."

What effect will you have from board with painted or printed finishes?

"I don't think we will have to worry about that in my lifetime or yours. People love nicely figured wood and good quality veneered work too well for us to worry over that problem."

What can you say about trends in types of wood and finishes developed on a particle board core?

"That depends a lot on what you are making and the kind of market you are reaching. Each of us manufacturers has to develop a little niche for himself. In Lane case goods, for example, we fit into the high-styled contemporary market. We recently introduced an important walnut veneer from New Guinea. Some visitors to the markets thought it was quite extreme, but we sold a lot of this group. Sometime ago, we brought out one walnut group with small ebony inlay patterns. One part of the design was a stylized bow tie in rosewood. People said that was an extreme design, too, but it is selling off the floor like hotcakes!

"We plan to bring out new designs each year, each design a little more 'extreme' than the one before, because these things soon catch up with themselves. We introduce different shapes and sizes of furniture to fit the new small homes. All these things soon become recognized, accepted, and finally pass into history to make room for newer ideas. If we stood still in this trend, we would find ourselves lost in past history.

"The limitation in contemporary originality is set by the ability of the market to accept new ideas. The stranger it is, the longer it may take—almost in direct proportion to the departure you make."

How does particle board affect the development of new furniture designs and new surface treatments?

"Thick sections can be produced more economically. Very thick tops or side panels with particle board cores cost about the same or less than thin sections with lumber core. Since the raw edges are face veneered, the extra thick sections give the pleasing appearance of solid wood with the advantages of plywood.

"The lower cost of particle board opens the way for experiments with thickness dimensions normally ruled out. Thickness, I believe, is an important element of design so particle board opens up a new dimension for the designer, a dimension formerly impossible with the high cost of solid cores.

"We have gone into drawer fronts of thick section particle board. We have to band these all around, but they are still more economical to produce than solid core fronts of thinner sections."

Do furniture manufacturers still resist particle board?

"The ones I know who haven't gone to particle board are those who are still using thin section with frames or those making traditional solid wood furniture. Some of the cheap furniture manufacturers use thin plywood mounted in a thicker frame to give the appearance of thick sections, like a card table top. Many good quality pieces from Sweden have particle board core all over. Europe made great strides in this direction before the average furniture maker in this country did."

How did some of the skepticism arise over particle board?

"After the war, the English were very short of lumber. They sawed up flagpoles, pilings and anything else they could find to keep their plants in operation. Necessity forced them prematurely into a poor quality of particle board. This soured the public so badly that even present quality particle board is just now beginning to be accepted in England.

"On the other hand, the Germans, being much more thorough and scientific in their approach, didn't use particle board until they felt that it was right. Their success came automatically.

"Fortunately, in the USA we haven't had enough misuse of particle board to get a black eye. It takes a long time to live down a bad reputation, so we are more fortunate than the English. Particle board in this country is now fully accepted and people who are not aware of this are not up-to-date on the industry."

What radical changes do you expect in the industry?

"To answer this we can look back 10 years. We have come a long way from early problems with a suspect ersatz material to reliable particle board used by almost everyone today.

"Our chemists told us five or six years ago that sometime soon someone would find a way of activating the lignin in wood and reconstituting the

Storage Master is a piece from the "Bow Tie" series. A number of units are available for various combinations.

This china cabinet also utilizes thick core design. Lanewood core is used and covered with beautiful veneers.

raw material. But they said it would take a couple of million dollars to develop it. We've waited for that development. Kroehler came up with it! Who knows what will be next?

"We are not looking for too many rapid and unexpected developments as different as Kroehler's higher cost Cultured Wood. Yet, we are wondering if this new material could be produced in an extruder as well as in the multi-platen press.

"In discussing future outlook, however, we must limit our discussion to particle board core for furniture. Someone will have to do a lot better job to make a core material at the low cost we have from the extruder system. It fits the furniture business perfectly. It fits the plywood business, especially for thicker panels.

"However, it does not fit applications where the surface is not covered or laminated. It does not take direct finishes well nor can it be satisfactorily printed. As we've already mentioned, I don't think we need worry about that because most consumers still appreciate a good finish on a *genuine wood* surface. So, direct finishing of extruded board is no real concern of ours.

"Since extruded board is an ideal core material and is the only kind we make or use, we would anticipate no drastic changes in the near future for this kind of material—only minor variations. Otherwise, we would not be presently putting in a second extruder system.

"We believe that developments in the future will be more *evolutionary* than *revolutionary*." □

Have You A Bonding Problem?

A new department is announced for an early issue. Here gluing problems will be answered by several authorities in the adhesives industry. Send your problem to the editor.

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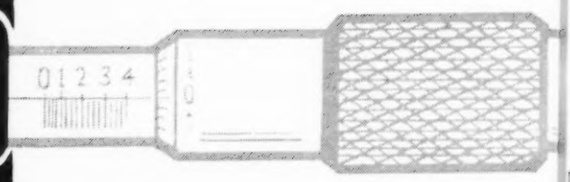

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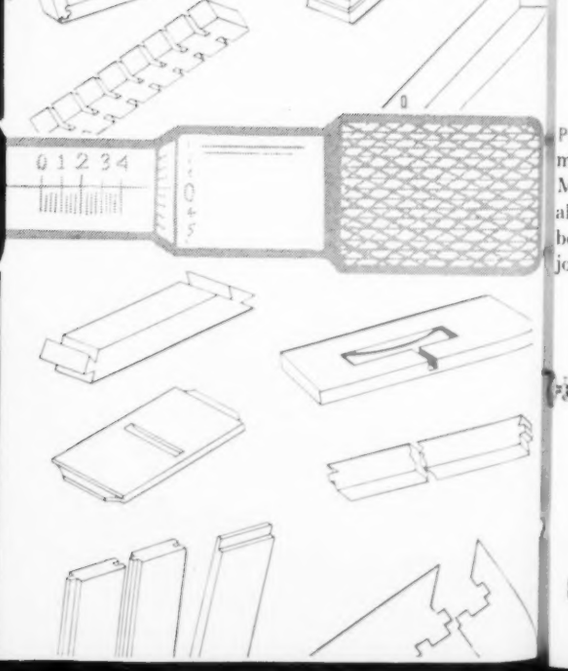
... in your woodworking operation can put extra money in your pocket. With Mereen-Johnson equipment, you gain production speed. You also reduce stock waste and rejects. Don't be satisfied with your output until you have investigated the Mereen-Johnson line. Write for information on machinery for your specific products.



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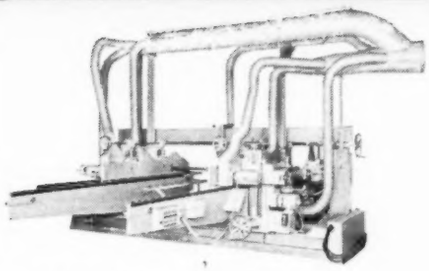
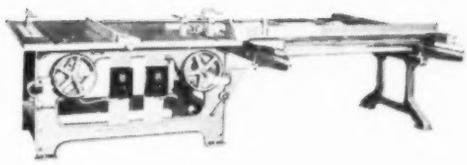
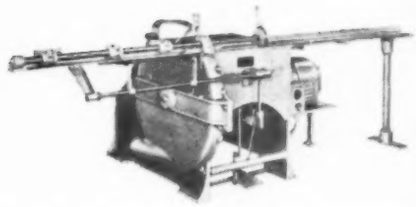


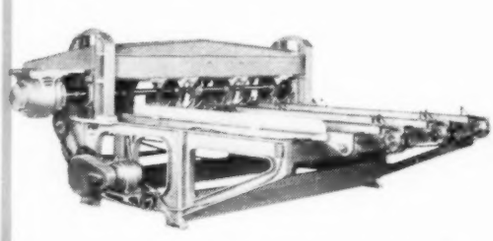
NO. 400 DOUBLE-END TENONER —Sizes up to 20′ to fit your requirements. Will square-cut up to 96″ ahead of trim saws. Numerous accessories are available to multiply its usefulness. Described in Bulletin No. 400.



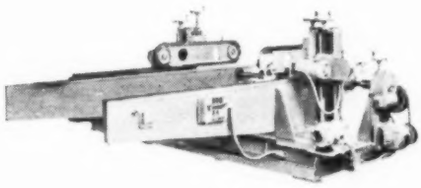
NO. 442-MT COMBINATION SAW—A versatile machine for ripping, cross-cutting, grooving, dadoing, beveling and mitering. Cuts up to 48″ wide and rips up to 50″ wide. Handles large stock easily. Described in Bulletin No. 442-MT.



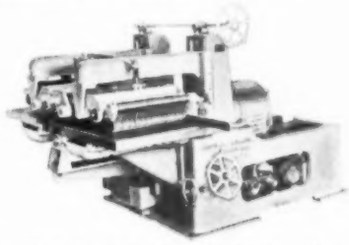
NO. 477 CUT-OFF SAW—Capacity equals two or three swing, straight line or roller carriage cut-off saws—depending on type and condition of stock used. An excellent machine for box work. Described in Bulletin No. 477.



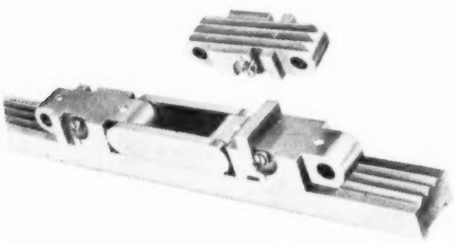
NO. 435-H MULTIPLE CUT-OFF SAW—Cuts long boards into short pieces . . . will square-cut large size sheets . . . and will cut any number of grooves. Excellent for sizing plywood. Described in Bulletin No. 435-H.



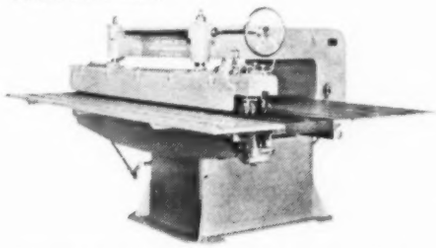
NO. 600 DOUBLE CUT-OFF SAW—Accurate production at high rates of feed. Labor saving attachments such as cope motors, dado arbors and other equipment are available for specific needs. Larger sizes available. Described in Bulletin No. 600.



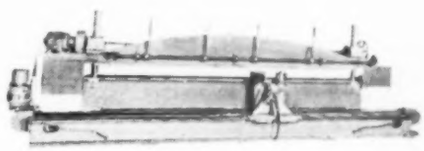
NO. 441-A GANG RIP SAW—For fast production on difficult gang ripping jobs. Eight power driven feed rolls . . . 12″, 19″, or 24″ saw space. Up to 150 HP. Variable feed drive up to 300 ft. per minute. Glue joint accuracy. Described in Bulletin No. 441-A.



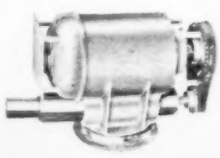
PRECISION FEED CHAIN—An entire department is devoted to feed chain manufacture. Multi-Vee, Double-Vee and Flat Track chains all have patented "snap out" feed dogs—no bolts or screws—fast, easy set ups to glue-joint precision.



VENEER SPLICER—Makes precision tapeless joints. Adjusts automatically for varying thickness of veneer normally fed through machine. Welded steel frame with 49″ throat clearance at right. Described in Bulletin No. 50.



VENEER JOINTER—Traveling head principle eliminates shifting. Perfectly joints bundles of veneer up to four inches thick. Sizes from 90″ to 212″. Described in Jointer Bulletin.



SAW MOTORS—Motors for special applications 3600 RPM or patented offset high speed spindle as illustrated. Unusual shaft extensions open or TEFC 1 to 25 HP. Also mounting slides, etc.

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The Fort Smith Story . . . Part 5

The Oldest Furniture Manufacturer

Ed Ballman founds factory in 1879.

Ballman-Cummings personnel, left to right: Gerald Martin, personnel manager; John Ayers, secretary-treasurer; Gene Rapley, assistant sales manager; C. D. Christy, plant manager; Walter W. Ayers, president; John Harper, sales manager; Selby Haupert, assistant to the president; Rex Ferguson, plant superintendent; and Marshall Thompson, office and credit manager.

If ever the city of Fort Smith decides to erect a Hall of Fame for illustrious sons, one of the first to be so honored should be Ed Ballman. While Judge Parker was having his 88 miscreants hung, Ed Ballman was establishing manufacturing plants to supply many of the needs of the growing community. Ed himself started making mattresses, then "rockers" and finally household furniture. While his own business was growing by leaps and bounds, he not only organized, but gave financial assistance to several other manufacturers. Two of these, the Couch Company, and Ballman-Cummings, were formed and for some time personally managed by him.

There is some question as to who was owner of the first furniture factory in Fort Smith. The Chamber of Commerce, in an informative brochure, gives credit to Ott & Muir, as starting in 1881. The information that I have been able to obtain shows that Ed Ballman founded his factory in 1879 and incorporated on August 4, 1894.

The Ed Ballman Company, needing a larger supply of raw material, joined the Cummings Lumber Company under the name of the Ballman-Cummings Company. This combination gave a complete cycle of production from raw material to finished product.

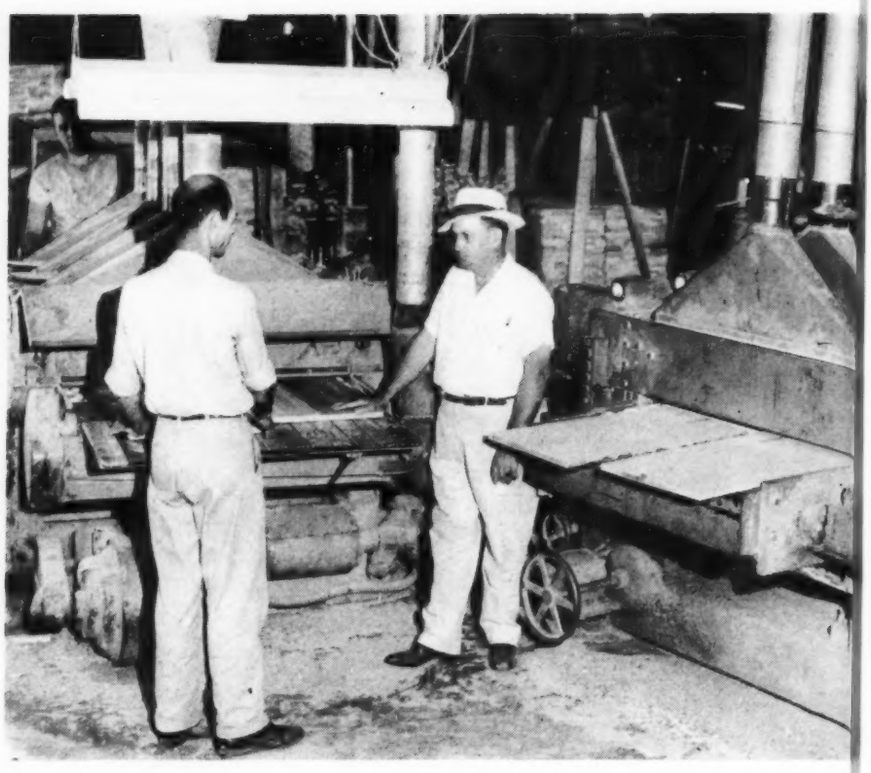
I wish there were space available to describe the many "expansions" the company enjoyed over the years, necessitated by their ever increasing sales. Incidentally, one of their biggest sellers was "the most comfortable commode on the market." This, of course, was before the advent of indoor plumbing in the southwest.

Mr. Ballman was a great believer in cooperation and one of the results of his efforts in that direction is still evident in the Fort Smith Furniture Manufacturer's Company, which he formed in the early days. This is a display and sales organization composed of several local furniture manufacturers of non-competitive items. This group maintains 25 salesmen who handle the lines of all member companies. Display rooms are maintained jointly, not only in Fort Smith, but in several other cities. As you can see, a salesman can offer practically a complete household furniture group.

The last 15 years have been banner ones as far as sales go, necessitating constant expansion in plant facilities and adding new machinery and equipment.

After the death of Ed Ballman, management was taken over by Mont Echols, who served from 1930 until his death in 1949. He was succeeded as president by Walter W. Ayers, a sincere exponent of Ed Ballman's policies. Mr. Ayers, a shrewd business man, has continued to build, not only the business of Ballman-Cummings Company, but that of the Fort Smith Chair Company, of which he is also president.

Standard and Moore kilns are used at Ballman-Cummings. Lumber sheds at left help maintain dry storage.



Drum sanders used here are Yates-American and a Solem SE 7-3.

Like Mr. Ballman, Mr. Ayers is vitally interested, not only in his employees' welfare, but in the betterment of the community as well. His many benefactions have been made without fanfare or publicity—the more credit to him.

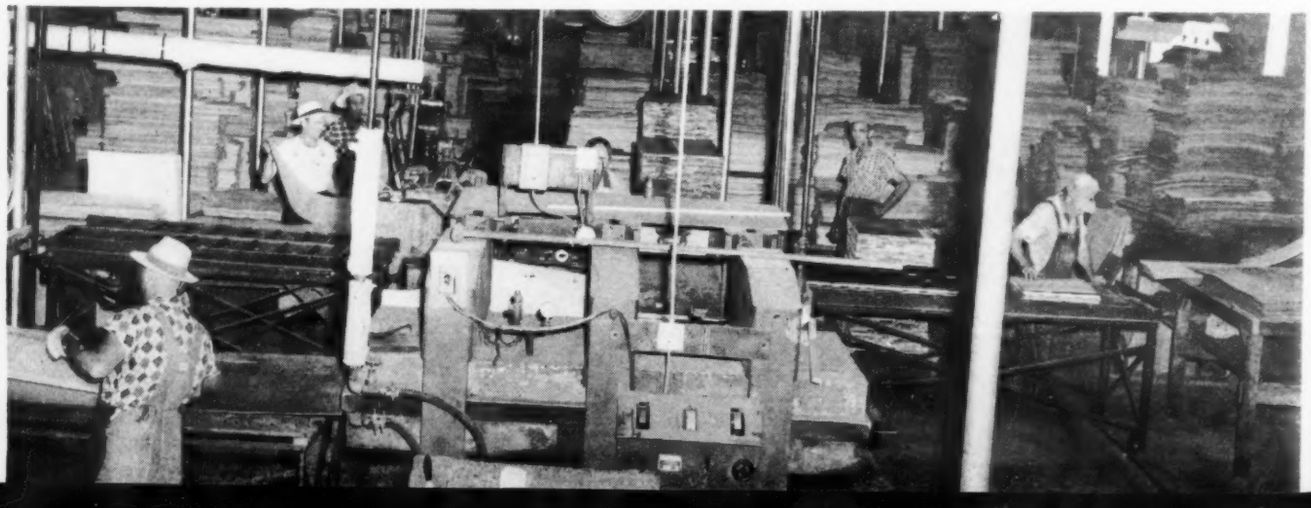
Success in furniture manufacturing, with its many and various departments, needs a well-rounded organization of men with the know-how and ability to get things done the way they should be done. Mr. Ayers has surrounded himself with just such men and they work as a team.

The company's major products are complete groupings of bedroom furniture, as well as individual pieces, designed and quality finished to compete with the best from anywhere. A day's average production is 130 complete suites. Modern methods, modern machinery, and a well-engineered equipment layout help make this possible.

Starting with the best lumber—oak, pecan, gum, willow and maple—, the next most important thing is drying. The company has a large, undercover yard, where thousands of feet of "sticked" lumber is stored after careful kiln drying. Here it is protected from both the direct rays of the hot sun and from rain and snow. Although they will be needing another dry kiln in the not distant future, the ones they have now very adequately take care of the lumber needed for present production.

A few highlights worth noting are described in the following paragraphs. One of these is the arrangement of a three drum sander and a four drum sander which are set at right angles on the feeding end so they can be fed by one operator. The off-bearers are positioned so that they load onto factory trucks which carry pieces directly to the next operation.

Plywood presses in operation in the plywood department. The company also has a Bethelsen press not visible here.



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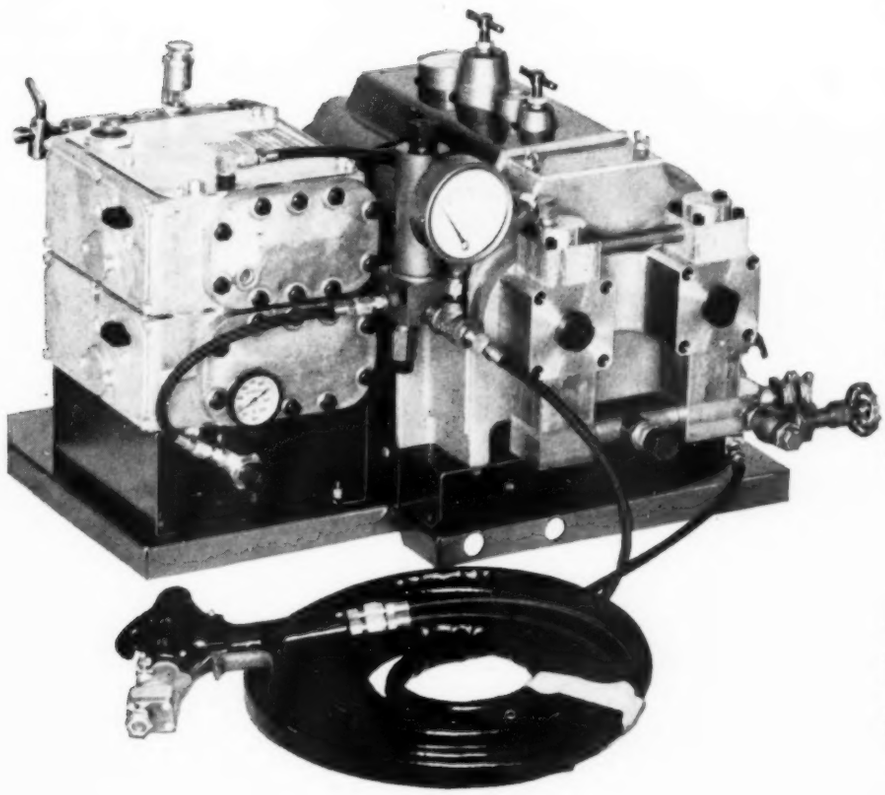

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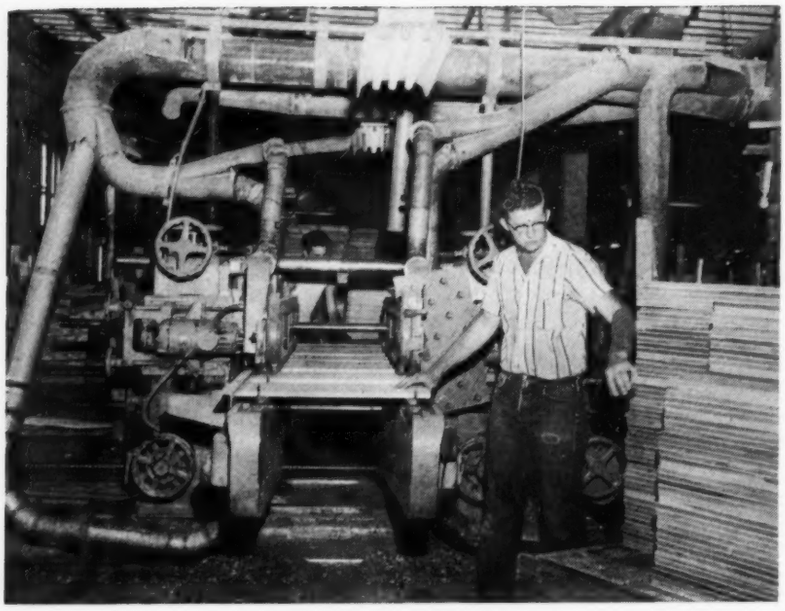
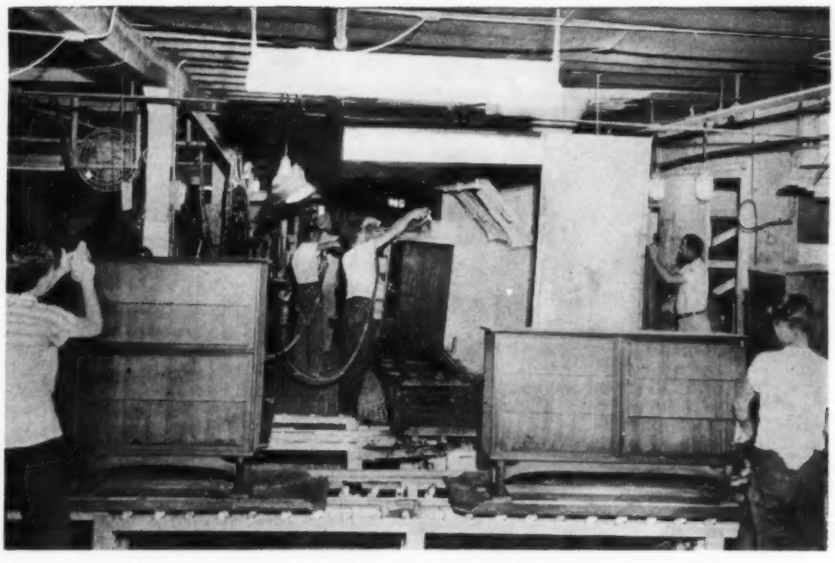


Off-bearer at a tenoner in the rough mill department.

Drawer fitting and hand-sanding in the cabinet department. This step actually precedes the toner application shown above.

First toner coat is applied. Application is made by operator at left; man at right is wiping.



Operator in foreground is wiping. Those in the background are completing spraying operations.

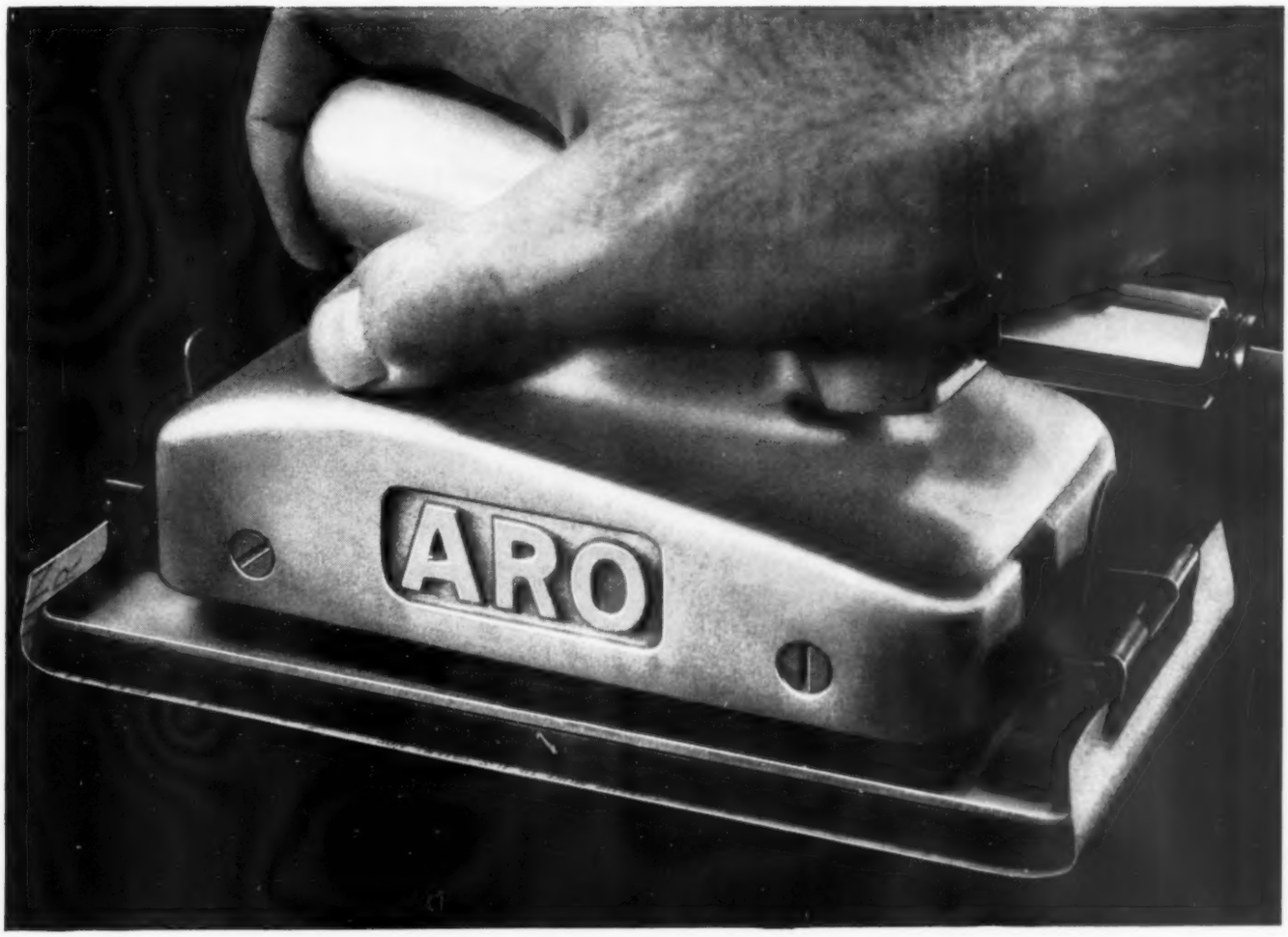
The Taylor Panel-Flo edge gluer in the rough mill department is capable of gluing-up enough material to supply the need, but it keeps the operators very busy making "big ones out of little ones." This machine not only edge-glues continuously, but rips to size desired.

Another right angle operation is where the offbearer on the tenoner, a Greenlee No. 544, takes from the machine at his right to load the factory truck at his left. Reducing unnecessary motions increases production and is easier on the operator.

Progressive operations simplify handling. For example, in the finishing mill, a Nash sander is placed so that the factory truck carrying the work completed on the turning lathe is right at hand.

With the merchandise assembled, it is transferred to conveyors to start through the finishing cycle. At this plant, the finishing line is a long one, starting with the drawer cleaning, fitting and hand sanding.

This part of the plant is completely conveyorized. After going through a dryer, the piece gets its toner coat. Naturally the final color and type of finish regulates the toner used. Varnish spraying and polishing are inspected when done so that there are few rejects at final inspection.



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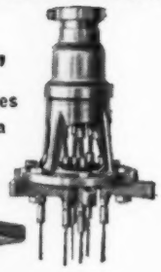
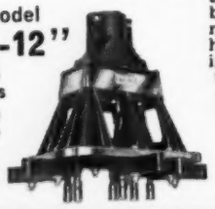


model "500"
2 to 6 spindles
drilling area to 18½"

model "3-22"
2 to 15 spindles
drilling area to 35½"

model "400"
2, 3 or 4 spindles
drilling area 3¼"



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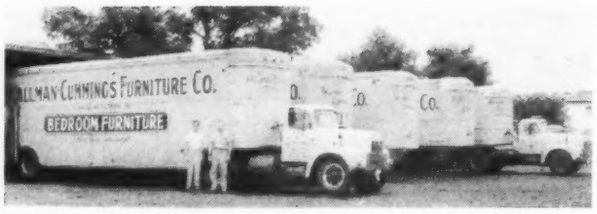

Getting the merchandise to the customer is a very important part of the Ballman-Cummings operation. The company leases the equipment—trucks and trailers.

There is a place in the furniture industry which should be especially watched. Here we can make a profit or suffer a loss. This is the delivery of the finished product. Ballman-Cummings uses truck trailers, but they don't own the equipment—they lease it.

Here are the arguments in favor of leasing. Probably the most important is maintenance costs. Where the equipment is leased, that problem is eliminated. Next the matter of truck drivers, and their union requirements. Then comes insurance. There is, I believe, a certain amount of liability on the part of the user, but that can be taken care of in the contract with the transportation company. So coming down to final analysis, the question is this. The transportation company isn't in business for love—they no doubt must operate at a profit. Is this profit big enough to warrant owning your own trucks to save that profit? One other point, and it is important, if you operate your own trucks, you can have them come and go as you please. □

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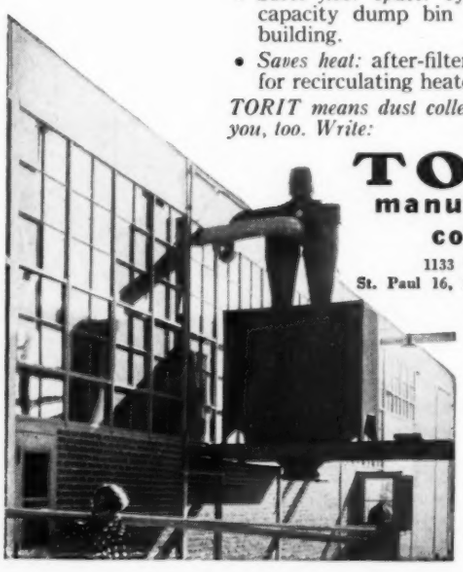

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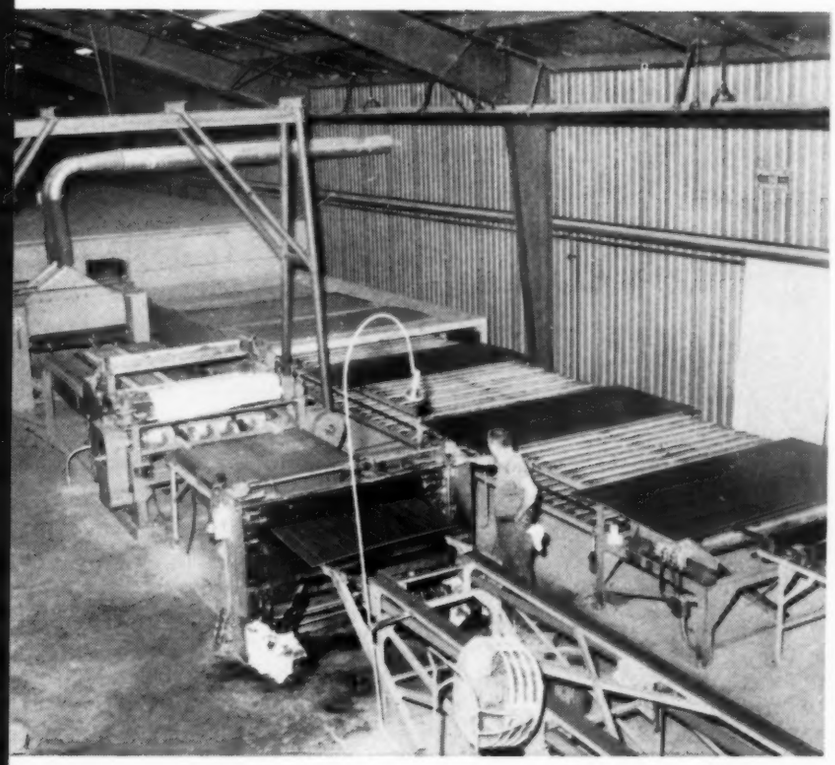

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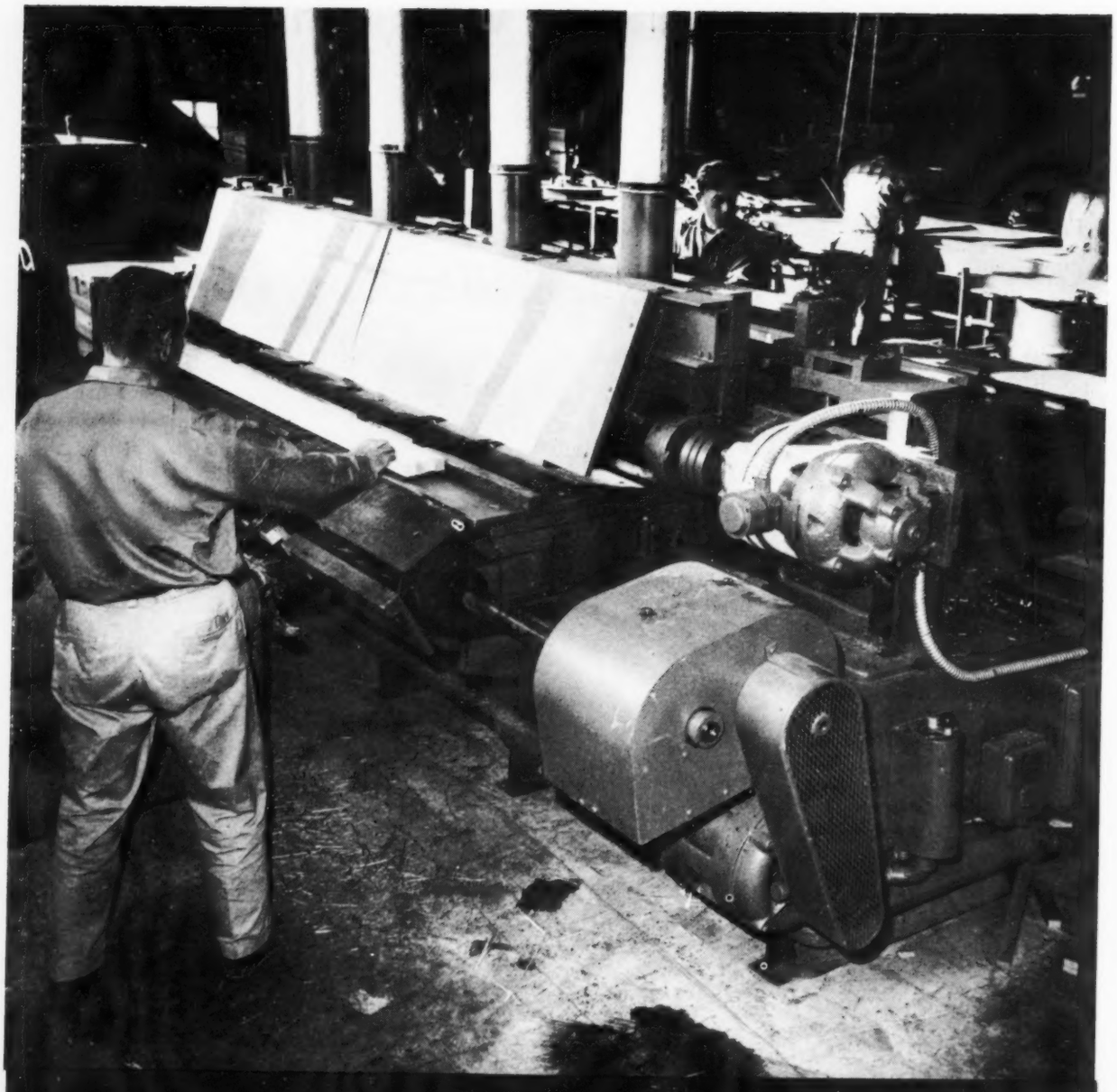
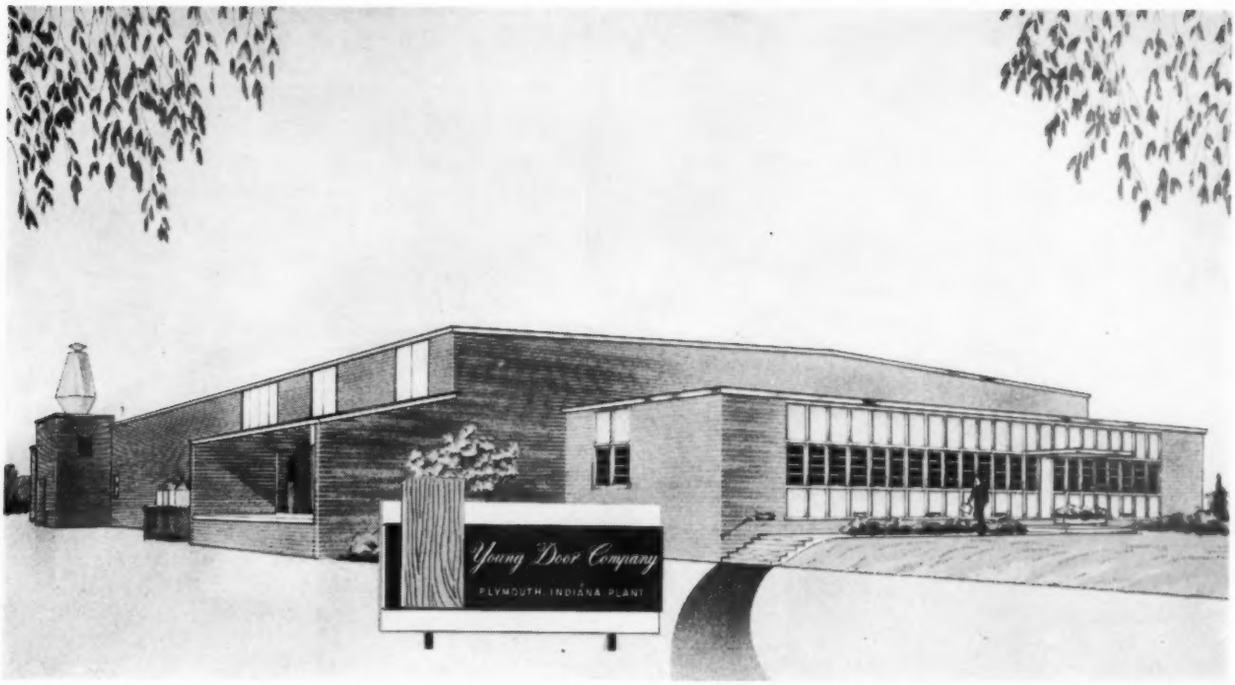
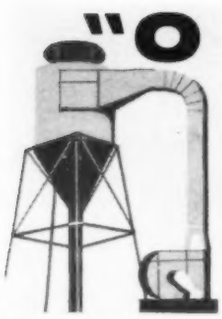


Young Ideas Made Young Door Success



If you want to stay young, and really want to grow with this fast changing world, you must be ready to change.



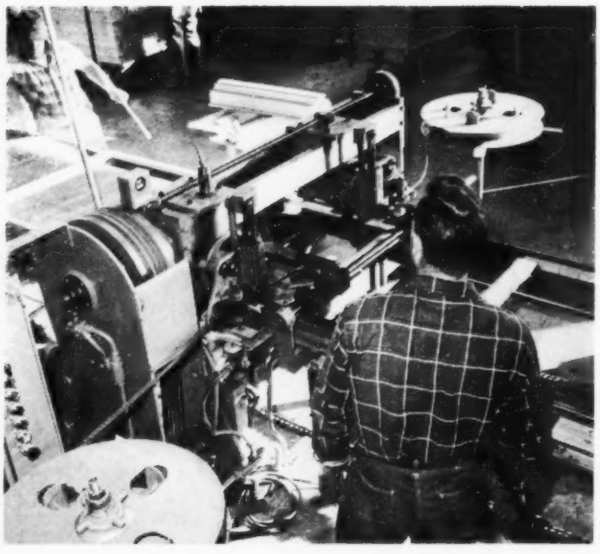
"One thing wrong with the woodworking industry," Bill Young, vice-president of Young Door Company, Plymouth, Indiana, told us recently, "is reluctance to keep abreast of new methods, new ideas, and new equipment."

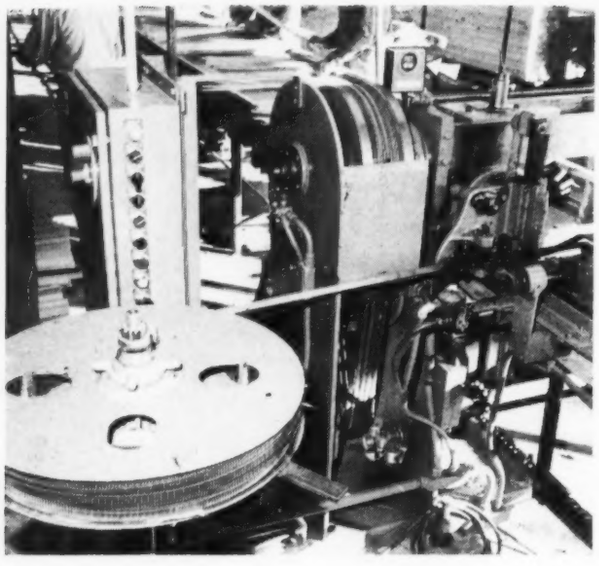
"If you want to stay young," he continued, "and really want to grow with this fast changing world, you must be ready for change and improvement whenever it can pay. I don't believe that some people actually know what it costs them to operate obsolete machines or facilities."

The Young Wood Products Company began as a father-and-son basement workshop in 1946, starting with a $500 investment in machines and equipment. This spare time operation started with a DeWalt saw, a cold press with clamps, and some miscellaneous hand tools. No further investment was ever made. From that point on, the company expanded solely by plowing back profits. It has continued growing ever since.

The immediate postwar market was a seller's market in the housing field. Competition was no problem. Therefore manufacturers could palm off whatever quality product they wanted to produce and consumers had to accept it.

Semi-trailer is one of several used by Young. Unfortunately, new location at Plymouth, Ind., has not been lettered in to replace the Michigan location.





Door frame parts (upper left) are loaded into hopper conveyor to feed automatically into the nailing machine.

Saranac automatic nailer (upper right), designed and built to Young's specifications, automatically assembles and ejects door frames at the rate of nine units per minute.

Corrugated fasteners, seen here in ribbon coils are used by the Saranac machine. Pushbutton controls appear to the left. Gage at upper right is direct reading for width setting on various sizes of doors.

This was a wonderful opportunity for anyone who was quality-minded. With competition not a serious problem, better than average quality merchandise could easily outsell the rest. And, with the slight overhead that the Youngs had, it was even easier.

In 1947, the Youngs expanded by adding a 24′ x 50′ building at the rear of the garage to provide more space. They added another press, a jointer and a shaper to make cupboard doors and drawers. It was the custom then for a contractor to build the basic cabinet work and framing, and subcontract the doors and drawers to a cabinet shop. This kind of work was a profitable addition to the door manufacturing business.

During this period, Bill Young's imagination was constantly concerned with ingenious devices to promote greater efficiency and lower production costs. One example was a setup he made with two DeWalt saws back-to-back and a rolling table arrangement in between. With the arms turned outward, it was a two-station work area for cutting parts. Then, by swinging the arms around, Bill produced the functional equivalent to a double cutoff with rolling conveyor work support. (Illustrations accompanying this article show a number of innovations combined with modern equipment in the present plant.)

Postwar housing was booming and by 1949, the Youngs needed more space. They moved into a rented building in Novi, Michigan. This gave them about 4000 sq. ft. In 1950, they purchased property with buildings in Novi, Michigan, amounting to about 12,000 sq. ft. of floor space. This was later expanded to a total of 22,000 sq. ft.

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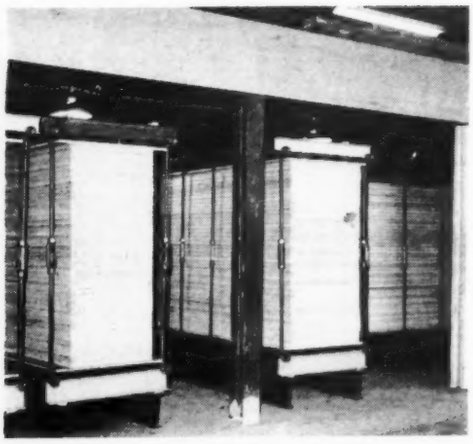

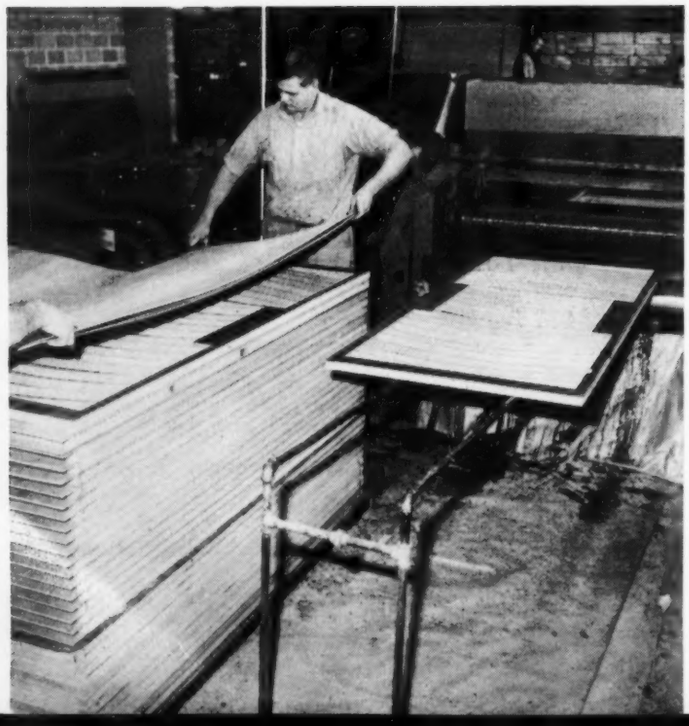

Meanwhile, the company name had been changed to the Young Door Co., and growth was not limited to the Michigan area. In 1955, the company built a 25,000 sq. ft. plant in Sunbury, Pennsylvania, to manufacture hollow core doors. Then, in 1957, 10,000 sq. ft. more were added to provide space in that location for the addition of solid core doors.

The present, ultra-modern plant at Plymouth, Indiana was completed in 1959 with 35,000 sq. ft. and a production capacity of 3000 doors per day on a one-shift basis.

When Robert Young, out of school, came into the business his primary interest was general administration and particularly sales. It was then that Bill gravitated into the buying of machines and equipment, planning plant layout, and managing production problems. Being personally involved

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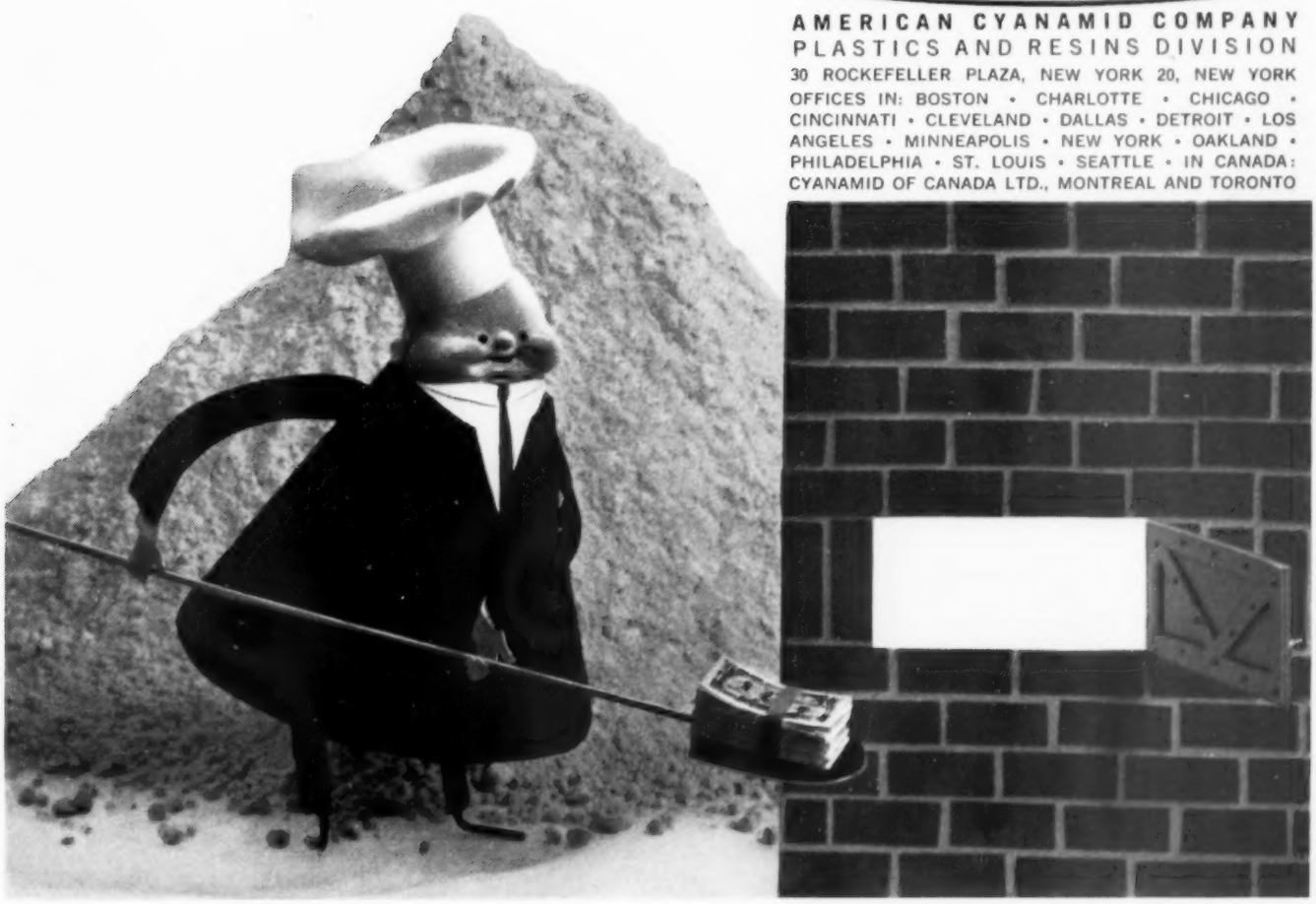

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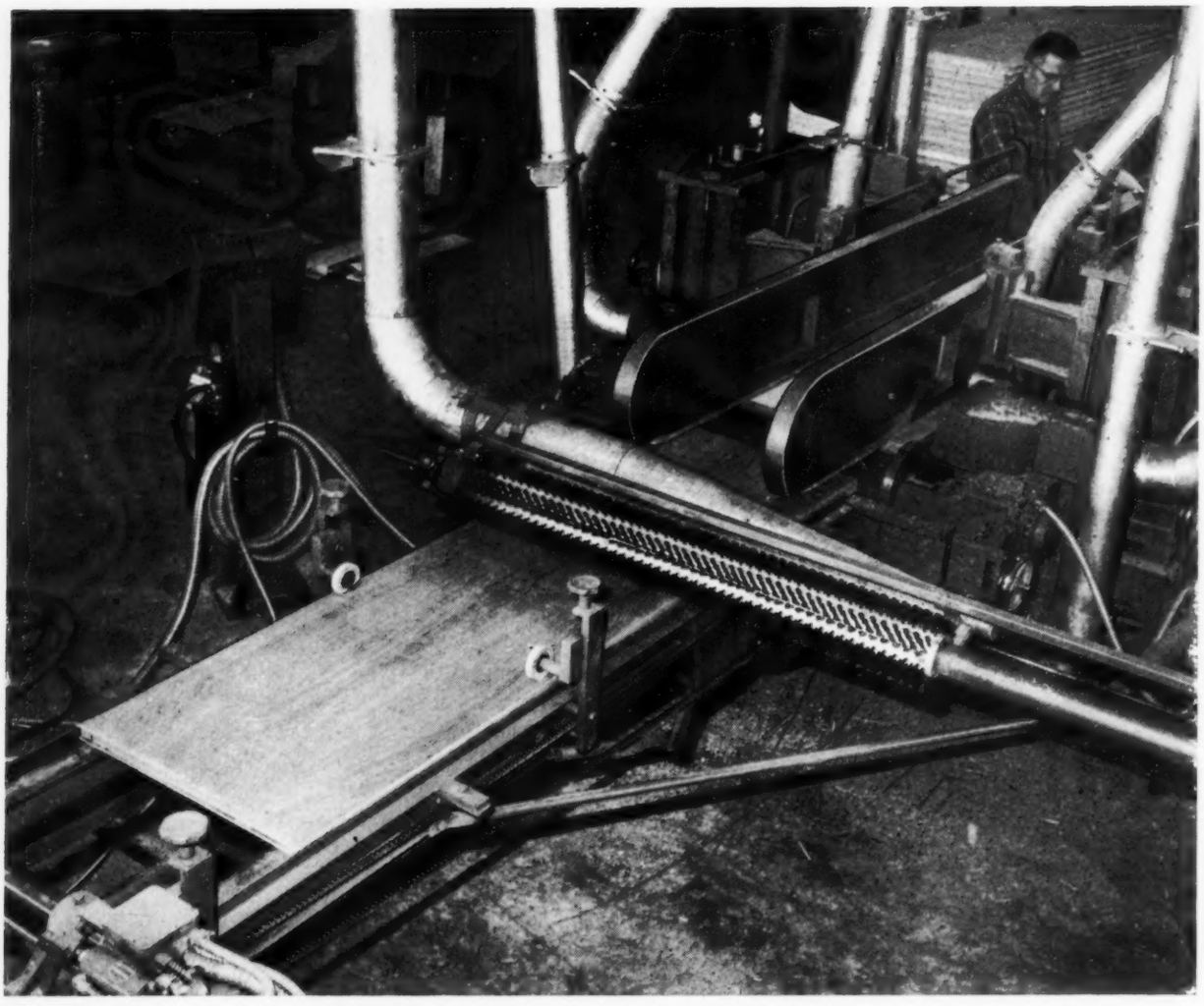

This CKL double end tenoner sizes doors to width, bevels edges, disc sands edges and brushes face of door clear of chips and dust. Transfer conveyor feeds doors into hopper mechanism at left.

in specific problems, he naturally let his imagination go to work on every possible improvement. Whenever he purchased new machines or equipment, he had the machine builders incorporate his unique ideas or specifications with theirs to produce many of the interesting features shown in the accompanying illustrations.

Bill is convinced that new, powerful and efficient equipment is necessary to make a profit in the woodworking industry. He does not hesitate to trade equipment for something better if it can improve an operation and is financially feasible.

How is obsolescence handled? Bill said, "We have no scientific method for approaching this problem. We play it by ear, to some extent, but not with snap judgment.

"We check to see when the cost of equipment can be justified by increased production or improved efficiency in actual number of doors or dollar savings. Now to justify something like a $4000 piece of equipment, let us suppose, for example that we will measure the output of this equipment against the cost and output of one worker whose annual salary will be approximately $4000. One can be weighed against the other in terms of cost per unit output to determine very quickly whether the machine investment is worthwhile.

"Something big like a planer is different. Every plant needs a good planer so you have to buy one. Improvements made in planers from year to year are relatively minor in terms of what you can measure out of the machine as actual production output. We would replace it, however, as soon as maintenance and repair problems became a costly factor in production. Or, we would consider whether or not improvements in a new model of the machine would result in a higher quality product."

In view of this thinking, how, then, is the cold press operation justified?

"We started with a cold press and retainer

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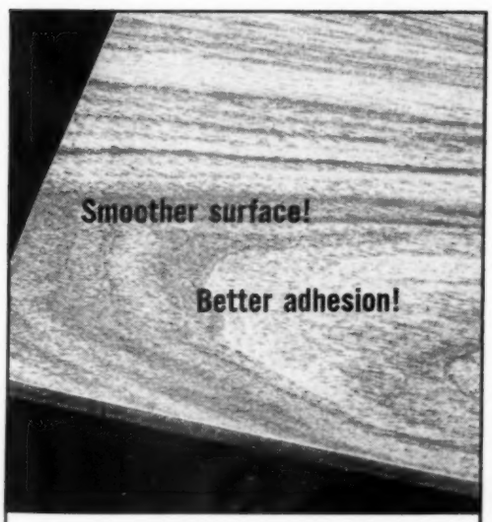

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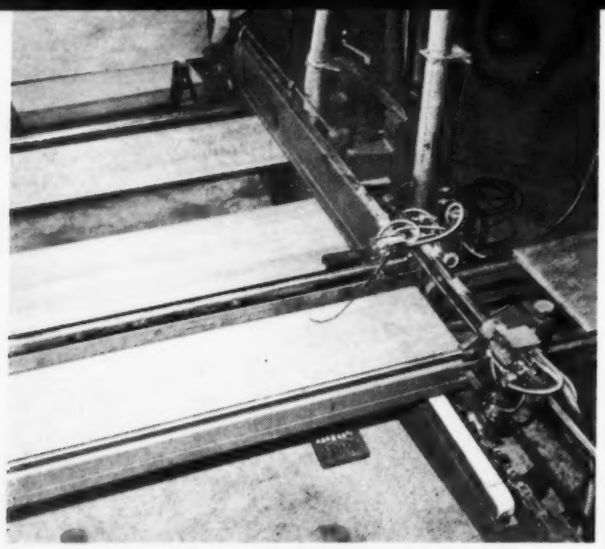
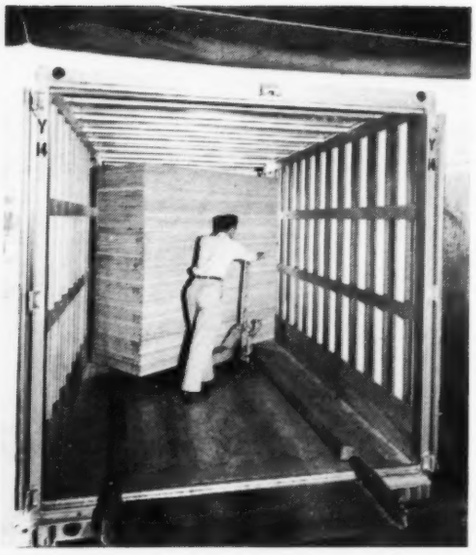
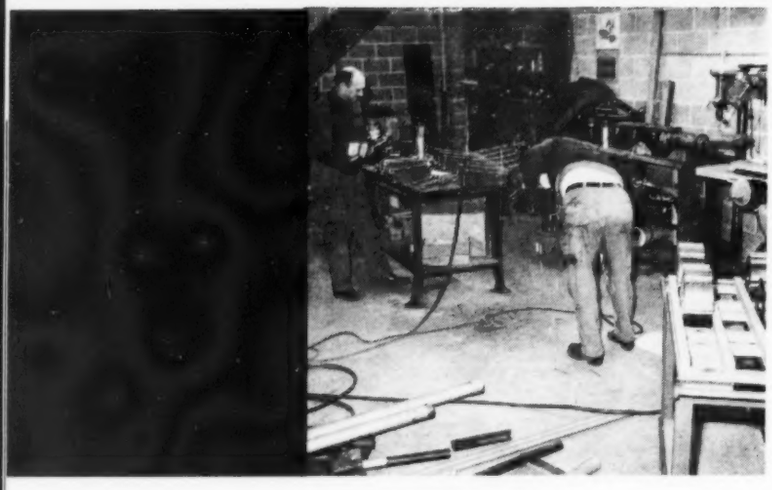






Doors enter this hopper mechanism (top left) from right, are trimmed to length in another CKL machine at left rear. Limit switches hold door in drop rails until previous door moves into machine. Next following door (at right) is held until hopper drop rails release and return. Leather covered plyfoam pad helps prevent damage to door faces.

Maintenance shop (left) builds special equipment, jigs and fixtures, performs all tool grinding, makes miscellaneous repairs, handles all welding and plant millwright work.

Another shipment of Young doors on its way.

clamps and have continued cold pressing ever since. But it is not a matter of tradition with us. We feel that we get better results by bonding with urea resin adhesives in a slow curing process under elevated temperatures rather than with casein or polyvinyl types used in quick clamping.

"Hot plate pressing is excellent, but we feel it is too costly for hollow door manufacturing. However, we do use hot presses in our solid core department of the plant in Sunbury, Pennsylvania.

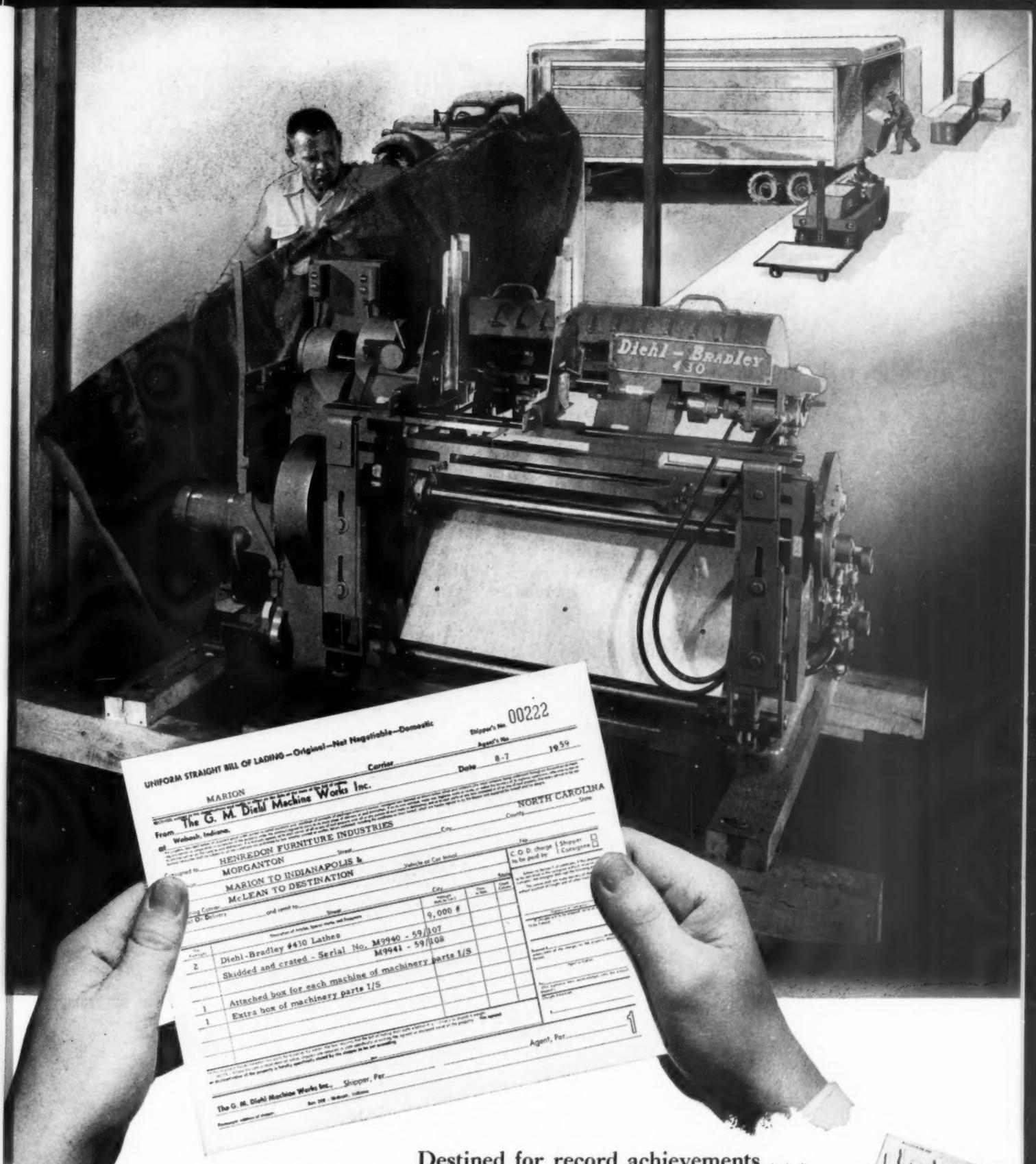
"High frequency gluing is something rather costly also. There is none used in door production as far as I know," says Bill Young.

Progressive thinking at Young Door does not stop at the end of the production line. It carries forward right up to the point of delivery at a customer's dock.

All products are delivered to customers in modern company-owned semi-trailers, serving the principal market area within a 300-mile radius from the plant. Delivery costs are held down to a minimum with efficiently operated, well-maintained equipment, and partial loads can be dropped along the way, giving prompt delivery not otherwise possible on small orders.

Efficient handling of loads in the trailers is another perceptive provision made. While all outgoing loads are easily stacked on pallets and shuttled with a plant fork lift direct from production floor or loading dock into trailers, some customers are not as adequately equipped for unloading. So each trailer is equipped with a hand operated lift which can pull a stacked pallet from the front end of the trailer to the tailgate with little effort. Then the customer can use a yard fork lift if necessary to remove the load and transport it to storage. If the customer should have a dock but no fork lift, the small lift kept in the trailer can handle the load anywhere desired at floor level.

The more one explores the thinking attitudes at Young Door, the more logical they seem. While it would appear that some criticism is directed toward the woodworking industry for not taking advantage of new ideas, methods or equipment, this criticism is tempered considerably with the intelligent warning against going overboard in ideas or investments which would jeopardize the financial status of a company. The name may be Young, but the thinking seems quite mature. □



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2	Diehl-Bradley #430 Lathes Skidded and crated - Serial No. M9940 - 59/107 M9941 - 59/108	9,000 #		
1	Attached box for each machine of machinery parts 1/S			
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It's a safe bet that production will hit new heights when these Diehl-Bradley Wood Turning Lathes reach their destination. From start to finish no other lathe can match the Diehl-Bradley for smooth, uniform, *controlled cutting*. An exclusive feature—cam and gear train feed—assures positive, trouble-free operation. If you'd like to see for yourself what the Diehl-Bradley #430 or #424 can do, your Diehl representative will arrange a demonstration in a nearby plant.

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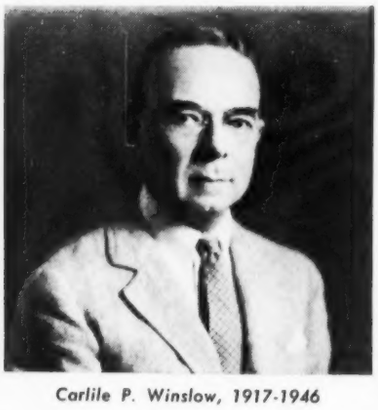
Golden Anniversary in 1960 For U. S. Forest Products Laboratory

McGarvey Cline, 1910-12

Howard F. Weiss, 1912-1917



Carlile P. Winslow, 1917-1946

■ The Golden Anniversary of the U.S. Forest Products Laboratory, oldest research organization of its kind in the world, will be observed June 2-4 at Madison, Wis., where the trail-blazing institution was founded 50 years ago.

Plans for the celebration, expected to bring hundreds of friends, "alumni," and well-wishers to Madison, are rapidly taking final form according to Director Edward G. Locke. The 3-day affair, he said, will be touched off with a banquet Thursday evening, June 2. At a general meeting of laboratory staff and guests Friday morning, key leaders in industry, government, and education will speak on various facets of research, past and future. And on Friday afternoon guests will tour the laboratory to view special exhibits and witness dedicatory ceremonies.

All day Saturday, the laboratory staff will hold open house for the public.

The pioneer laboratory was dedicated June 4, 1910, to a career of public service which, Dr. Locke pointed out, has yielded rich returns to both producers and consumers of a multitude of wood products.

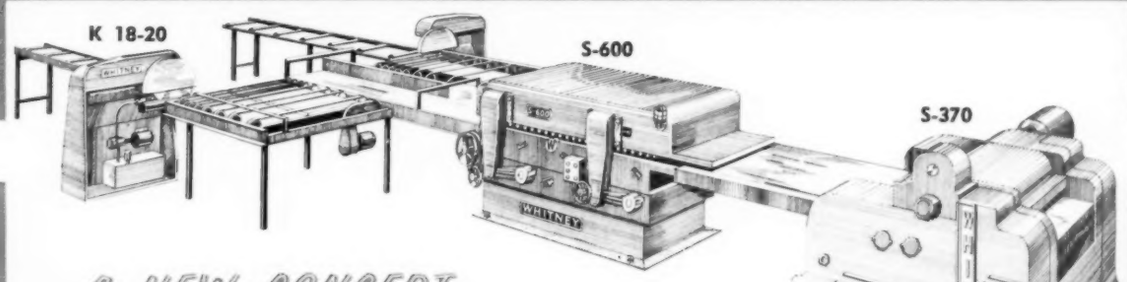
Cooperative efforts of the University of Wisconsin and the Forest Service, U.S. Department of Agriculture, brought the laboratory into existence. Forest Service research on wood had been going on for a few years under agreements with a number of universities from New England to California. But it had

George M. Hunt, 1946-51

J. A. Hall, 1951-59

Edward G. Locke, 1959—

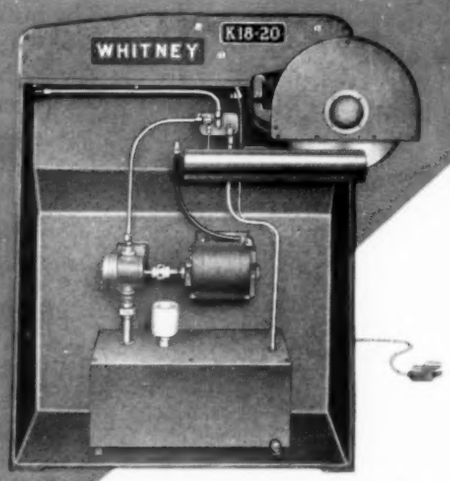
WHITNEY RUFFENDER



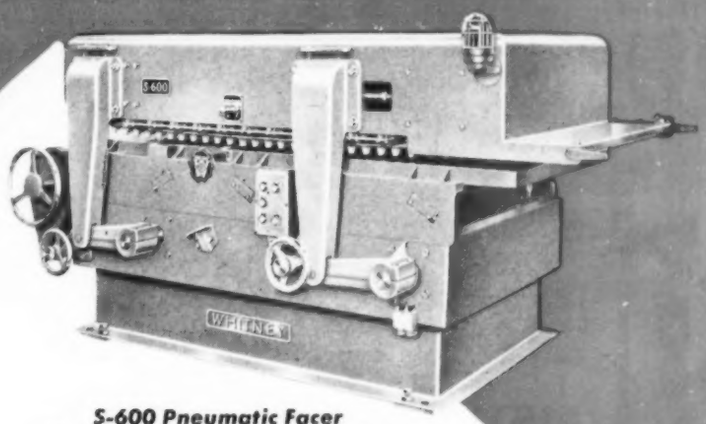
A NEW CONCEPT

in a rough end conveyorized system featuring hydraulic cut-off saws, facers, six or four roll roughing planers and conveyors all new and proven superior to any available equipment.

CRITERION OF THE INDUSTRY

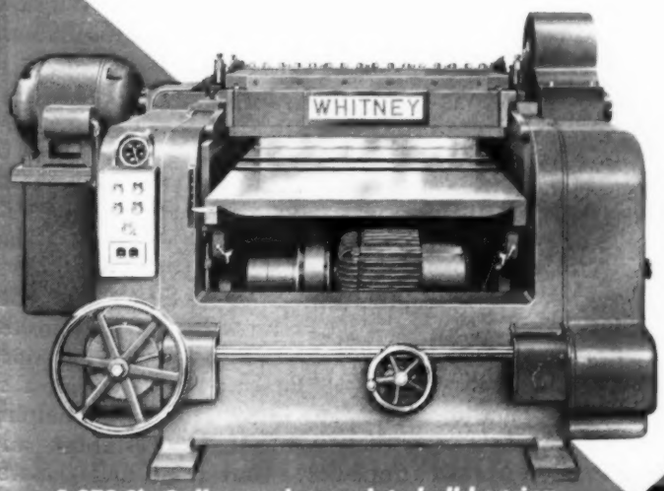


K 18-20 Hydraulic Cut-Off Saw. Cast iron base, aluminum ram, high speed steel hardened ways running in ball-bearing rollers. Foot operated or automatic stroking up to 45 cuts per minute.



S-600 Pneumatic Facer
The Rubber Cushioned Machine
with the Human Touch
24" or 36" wide

S-480 Four Roll Rough End Planer
Built in 24" and 36" sizes.



S-370 Six Roll extra heavy duty ball-bearing Roughing Surfacer for 36" rough end lines.

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178-A-HS

NEW

HIGH SPEED DOWEL DRILLS

TOOLS FOR CRAFTSMEN
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NEW DESIGN

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NEW QUALITY

High-speed steel provides longer life . . . greater accuracy . . . drills in any kind of wood . . . really boosts production! Also available in tough, durable alloy steel. Write for complete data and sizes. Catalog 36-M.

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quickly become obvious that better organization and closer contacts between workers were needed on the various projects.

Proposals to build a laboratory for forest products research were turned down, however, by Congress. This led to a canvass of various universities by Forest Service officials, then headed by Chief Forester Gifford Pinchot. Several schools made concrete proposals of aid and cooperation. The best one came from President Charles Van Hise, conservation-minded president of the University of Wisconsin, whose Board of Regents authorized an offer that included a new building complete with heat and power.

The new laboratory did not remain unique in the world for long. During the very first decade of its existence, spurred by the needs of a nation embroiled in a world war, it demonstrated its capabilities beyond anyone's quibbling.

When supplies of seasoned lumber grew short, a new kind of dry kiln was devised by Laboratory physicists to turn out lumber for cannon wheels, military barracks, and those new-fangled aeroplanes faster and better than ever before.

When airplane designers asked for lighter, stronger wings and fuselages, laboratory engineers came up with the revolutionary concept of "stressed-skin" construction. And to make it work, Laboratory chemists developed glues with then unheard-of resistance to water, to bond the plywood skins to the wooden frames.

And thus it went. Whatever the problem, scientific teams combining skills of various traditional sciences pooled their know-how for answers. It rapidly became proven beyond doubt that many problems of wood research were common to several branches of science. The physicist trying to remove water from wood and the chemist trying to put preservatives in were up against the same fundamental task of studying the movement of liquids and vapors through the microscopically small openings in wood structure. The engineer doing research on wood's strength needed the help of the botanist schooled in wood structure and growth. And so on.

The half-century span of the laboratory's existence, Dr. Locke remarked, has coincided with the world's emergence from the "the horse-and-buggy age into the age of rockets." The laboratory's research program has been likewise transformed, contributing not only "better seasoned wood for wheelwrights but more dependable nitrocellulose propellants for space vehicles," he emphasized.

Dr. Locke, the laboratory's sixth director in its 50-year history, took office last year as successor to Dr. J. A. Hall. The laboratory's first director was McGarvey Cline, who was succeeded in 1912 by his assistant, Howard F. Weiss. In 1917 Carlile P. Winslow started by far the longest tenure in office, remaining until 1946. He was succeeded by George M. Hunt who moved up from the post of chief of the division of wood preservation. Hunt retired in 1951, when Dr. Hall took over.

Cline and Weiss have been credited with conceiving the idea of establishing a forest products laboratory in cooperation with a university. The two Forest Service research engineers won official support for the plan from Pinchot. When Cline went to Madison as the first director, Weiss went along as assistant director. Among others joining them there was Winslow. In 1913 Hunt came to the Laboratory from other research duties in the Forest Service.

Indicative of the youthfulness of the men who launched the laboratory and directed its course in its first half century is the fact that all ex-directors but one still live. Weiss died in 1940. Cline resides in Jacksonville, Fla., and Winslow in Washington, D.C. Hunt, since his retirement, has spent most of his time in the Philippines, helping that young nation establish and operate a forest products laboratory. Dr. Hall is a consultant to forest products manufacturers in Portland, Ore. □

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AN "ALL NEW" EDITION OF THE MOST USED BOOK IN THE WOODWORKING INDUSTRY

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The ONLY complete "buyer's guide" for the entire woodworking industry . . . listing suppliers of over 800 products . . . their names and addresses . . . their trade names . . . and a complete index showing products manufactured by each supplier . . . all in a hard-covered, case-bound, thumb-indexed 400 page book.

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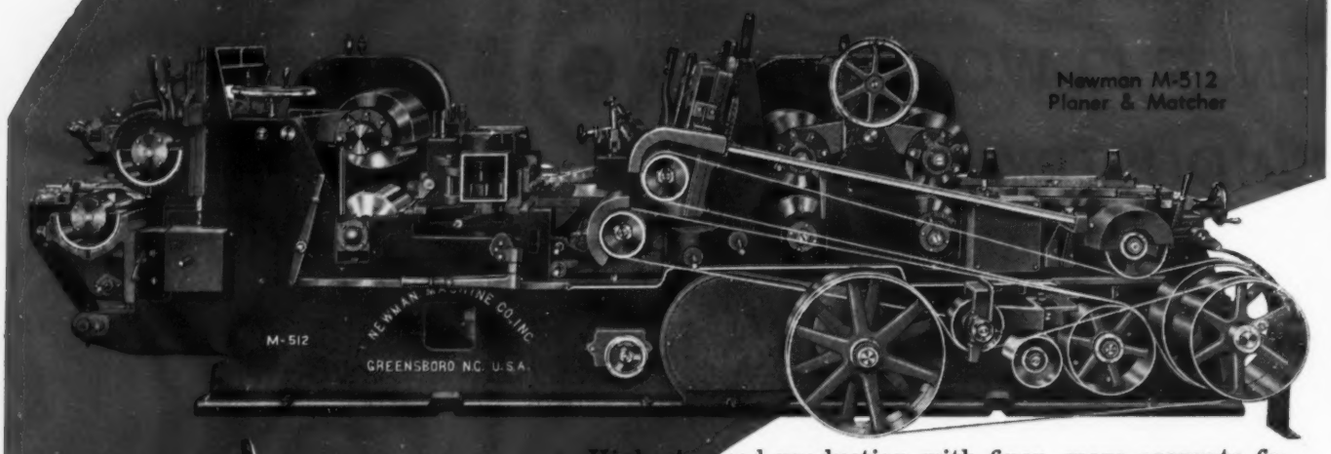

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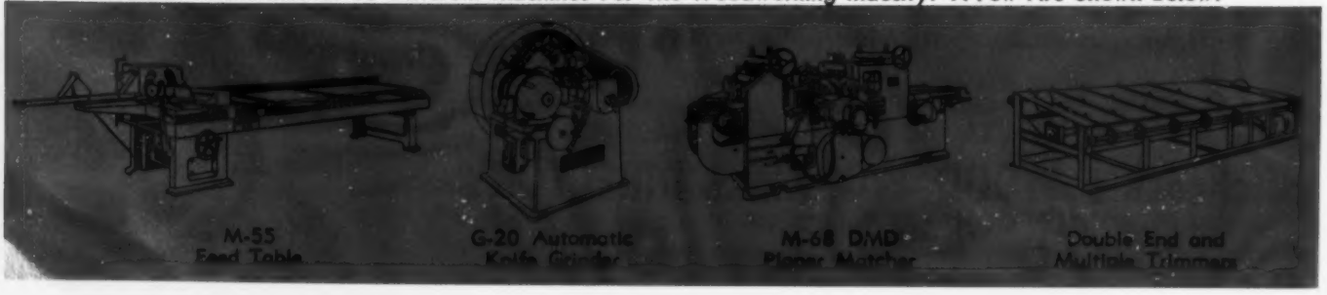


A Special Report On The . . .

"GOLDEN JUBILEE" BOAT SHOW

"Nash"

Dear Boss:

Minutes after the 50th National Motor Boat Show opened in New York's mammoth Coliseum it became obvious that all records would be broken, despite freezing temperatures and a 50¢ boost in the price of admission to $2.00 per person.

Since this is the show's "Golden Anniversary" edition, let us pause for a moment and contemplate the past. The first Motor Boat Show was staged in 1905 in the old Madison Square Garden. There were 56 boat and accessories exhibitors then. This year there were 426 and their products filled five gigantic floors of the Coliseum.

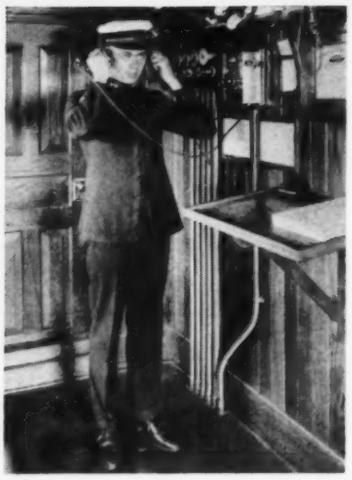
In 1905 there were approximately 15,000 pleasure craft in the country, steam or naphtha launches and the early gasoline motor boat. Their styling resembled floating surreys with the fringe on top. Wicker chairs and cushions were considered frivolous luxuries. Women—especially wives—were not particularly welcome on board.

In 1959 no less than 7,800,000 pleasure craft were afloat on the nation's waterways, with every manufacturer trying to please the ladies. Some of the larger boat manufacturers even employ women interior decorators. Boating has truly become a family sport, and the annual Motor Boat Show an attraction for all.

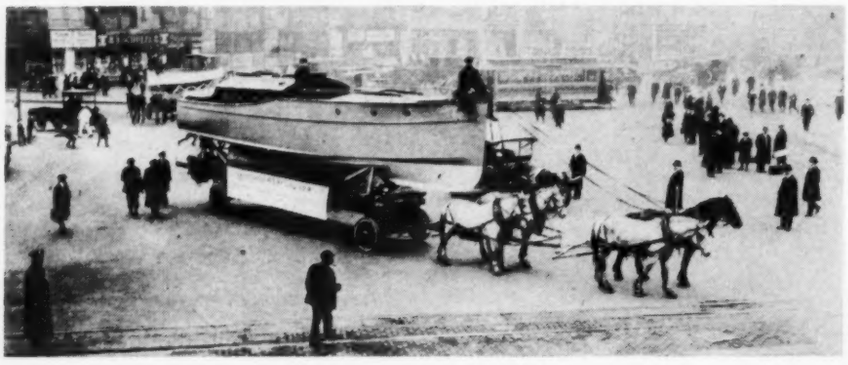
Of course WOOD—Which is *Naturally* Best for Boats—has had an enormous share in this fabulous growth, which can best be shown by Tables I, II, & III.

Visitors (total was 403,300) launched the "Sailing Sixties" at the 1960 National Boat Show, placing $32,000,000 worth of orders, up 18% from last year.

The first Motor Boat Show was staged in 1905 in the Old Madison Square Garden. At that time there were 56 boat and accessories exhibitors. Most of the floor space for the 1905 show was occupied by a lake, put there to demonstrate that boats could actually float. At the 1960 Boat Show there were 426 exhibitors filling 5 gigantic floors at New York's giant Coliseum.

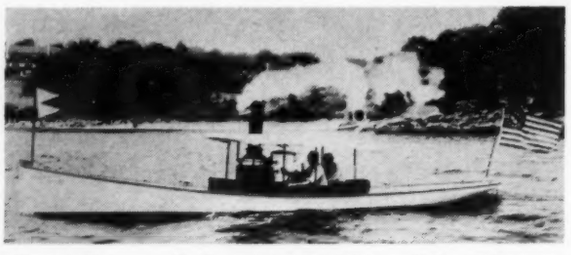


At the time of the first boat show in 1905 mariners were experimenting with "new" underwater sound gear as above. The system devised by Submarine Signal Co., a part of Raytheon Co., used bells which were rung underwater at lighthouses and lightships. Microphones below the waterline on each bow of the ship were connected to dual headsets on the yacht's bridge. To locate his position the mariner turned his ship to balance the sound in each ear.



Motor boats preceded motor trucks as can be seen by this picture of a large cruiser drawn by horse to an early boat show.

These models already proclaimed at the 1924 Boat Show that WOOD WAS NATURALLY BEST FOR BOATS and nothing has occurred in the intervening years to change our opinions about women and wood.



The *Nellie* was displayed in the lobby of the Coliseum. Of course, made of wood, the boat is spotless in appearance and until recently was used for pleasure boating in Long Island Sound.

The Past Shows Us the Future

In keeping with the historical spirit of this "Golden Jubilee", the sponsors of the show placed three historical boats on display in the lobby of the Coliseum. The oldest was *Nellie*, a 30′ steam launch built in East Boston, Mass., in 1872. Of course, made of wood, *Nellie* is spotless in appearance, even to the fringed awning that covered her cockpit. The steam engine is in full operating condition and until recently she was used for pleasure boating in Long Island Sound. What a proud testimonial she was to the enduring beauty and strength of WOOD!

In 1905 outboard motors had just been invented, but none was yet available to be shown in public. The first outboard motor (so they told me) was a French device called "Motogedille" which was first exhibited at the 1906 show.

Pirates' Progress

As can be seen, WOOD's competitors in the boating field are, to say the least, formidable and ruthless. What have wooden boat manufacturers done to ward off the pirates?

Until recently, very little.

When I covered the 1958 Motor Boat Show, I was amazed to learn that there was no association for wooden boat manufacturers. I believe, I was one of the first to urge publicly the formation of such an association—the sooner the better. (*Hitchcock's Wood Working Digest,* April, 1958).

To everybody's astonishment, my 1958 article "Battle For The Waves" triggered a series of happy

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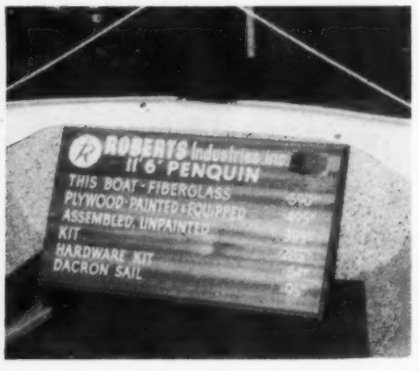
. . . your LODGE-ical choice

Vice-president R. J. Buckley (with glasses), Penn Yan Boats, Inc., Penn Yan. N.Y., did his best to display WBF poster. But show visitors did not really have the time or inclination to read it carefully.

Mrs. Kowalski of Dunphy Boat Corp., Oshkosh, Wis. did a far better job singing the praises of wood for boats than the well camouflaged WBF poster on the right.

I had to stand on my toes and put on my glasses before I could read this poster.



It's not always easy to get a straight answer to the question: "What's cheaper, wood or fiberglass?" A good answer is provided by Roberts Industries, Branford, Conn. This boat in fiberglass costs $590.00; in wood it is only $495.00.

chain reactions. For months we were kept busy answering letters on this subject. By the time the 1959 show rolled around, a wooden boat manufacturers' association was definitely in the state of incubation, though not yet a reality.

When I covered the 1959 Motor Boat Show I was greatly delighted to see and report that numerous colored, attractive cardboard posters were displayed right inside the wooden boats proclaiming: "WOOD IS *NATURALLY* BEST FOR BOATS." These posters had been designed and provided by the Fine Hardwood Association in a spirit of generosity and cooperation. They made quite an impression. Every one of the 415,000 show visitors who looked inside a wooden boat last year must have seen them.

(Incidentally, they also scared WOOD's competitors.)

Finally, in 1959 wooden boat manufacturers joined hands and created the Wood Boat Foundation, an association of wood boat builders and suppliers.

I am retracing these historic facts leading up to the 1960 show because, further on, I shall claim for myself the inalienable right—nay duty of every father to admonish his children.

No Wind In the Sails

Tingling with happy anticipation I rushed to the 1960 Boat Show, and bursting into the press room I shouted, "Where is the Wood Boat Foundation press kit?"

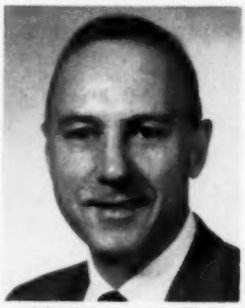
Soon my heart sank lower than a bathyscope. No press kit was available. Instead they handed me—mind you ME!—a shiny golden Aluminum

PHILLIP LATASA

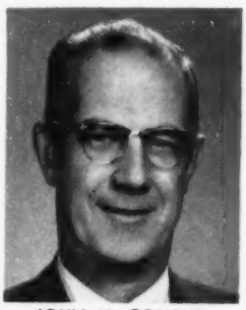
ROGER W. BUSHNELL

W. H. ZIRKEL

C. JEROME UNDERWOOD


ROBERT H. LOWETH

ARTHUR S. KELLY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Roberts Industries, Branford, Conn. construct their lively little Blue Jays of Mahogany marine plywood, with mast and T-boom of solid Sitka spruce. All wooden Roberts boats come completely finished, in ready-to-paint or kit form.

Ventor Boat Corporation, Egg Harbor, N.J., proudly featured this cruising skiff offering luxurious accommodations for four, rugged lapstrake construction, heavy oak framing, deep keels and the finest of craftsmanship. Most attractive is the built-in boarding ladder in the transom which the company calls "Seasteps." This appeals to the fisherman and to the family that often boards its boat from a dinghy, after swimming or waterskiing.

Committee press kit which made me seaweed-green with envy.

The New York Boat Show is covered by the nation's top journalists. What a hit it would have made with them if a press kit had been provided in a flexible, real wood veneer cover, such as the bindings of National Hardwood Lumber Association's Year Books.

Drifting onto the exhibition floors I looked in vain for a long time for signs of wood boat promotion. Finally I found a few pillars ineffectually decorated with some black and white newspaper size sheets that had lots of printing and practically no readers.

My curiosity aroused, I put on my glasses and stood on my toes, which makes me nearly 7′ tall. I discovered that these sheets were entitled, "Things You'll Want To Know If You Are Planning To Buy A Boat." The message was extremely well written and every word on it was absolutely true. Yet who but a confirmed wood partisan like myself would spend time studying such a lengthy, poorly displayed poster.

INSIDE the boat is where they should have had poignant posters, like last year, because that's what everybody came to see. The message, 'Things You'll Want To Know," could have been handed out in the form of a small brochure, with cartoons if possible.

Since some of my best friends are wood boat manufacturers and I love them and understand their problems, I shall not say all of the briny things that are in my heart. Besides, I believe next year things will be different and better.

The members of WBF are just beginning to realize that paying dues is not nearly enough. A trade association can only succeed if its individual members are self-sacrificing, dedicated, and donate freely of their time and brains for the collective welfare of their industry.

WBF members cannot afford to waste a single moment. All around them are monstrous sea serpents trying to devour them by every possible means.

A Good Question

For example, one of the claims of aluminum boat manufacturers has always been that their boats "in fresh and salt water need only a periodical clear water rinse to be attractive for years". (Quotation taken from the Committee of Aluminum Producers news release distributed at the 1960 show by publicity agency John Moynahan & Co. Inc., N.Y.C.).

Is That Really So?

The Duratech Manufacturing Corp., Peekskill, N.Y. definitely does not agree. Duratech should know. They are important manufacturers of aluminum outboard boats.

At the 1960 boat show they demonstrated a new, non-metallic, anti-fouling paint for use on aluminum boats avoiding problems of electrolysis and galvanic corrosion while preventing marine growth. This paint was specially developed for them by Pettit Paint Company.

Well, well, what do you know? So aluminum boats have to be painted after all, because alumi-

Above you see Dick Jedlinsky putting the finishing touches on a main shaft section for a big 84" swing Model 244 Veneer Lathe.

Note the gleam of the ground finish as the shaft is machined to within three ten thousandths of an inch (.0003") to insure a perfect fit.

This shaft with 6 different diameters is an engineered part, not merely a section of commercial shafting. It revolves on four heavy duty precision ball bearings and carries a pinion which is secured in position by special lock nuts.

Fully aware of the high standards that must be maintained at Coe, Dick skillfully utilizes his years of specialized experience to aid in building the best possible veneer lathes that will produce grade AA sheeets at top speed.

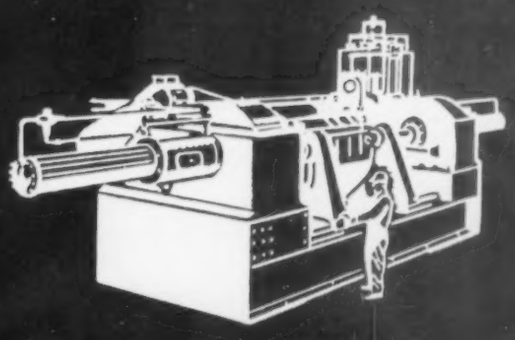
This rigid attention to details is evidence of the fact that in all Coe machines

Quality IS OUR PRINCIPAL INGREDIENT

The COE MFG. CO.
PAINESVILLE, OHIO
PORTLAND, OREGON

COE

LATHES
CLIPPERS
DRYERS
KNIFE
GRINDERS



num suffers from the ravages of electrolysis, galvanic corrosion and barnacles!

Isn't that interesting? Apparently "a periodical clear water rinse" as blithely suggested by the Committee of Aluminum Producers is by no means enough to keep an aluminum boat shipshape!

(Incidentally, this could be gruesome news to some home owners whose houses have aluminum sidings, windows, etc.)

The brutal fact is that aluminum's spokesmen (and we might as well include those of the plastics manufacturers) are—shall we say—overenthusiastic. Indeed, the U.S. Government recently had reason to enter a complaint against one of the mammoth aluminum companies for fraudulent TV advertising.

On Parade

INBOARDS—Despite the inroads of substitutes, builders of the nation's inboard cruisers still consider wood—either carvel planking, lapstrake or sheet plywood—the material of choice.

Of the more than 100 cruisers on display, the 1960 inboard show flotilla included only five fiber glass inboard cruisers, and no aluminum or steel boats. This marks the first boat show in many years *that not a single steel cruiser was on display!*

OUTBOARDS—Twenty-three outboard cabin cruisers in molded plywood, sheet ply and fiber glass with sleeping, galley and toilet facilities—the three basic requirements of a cruising boat—were being shown by 18 companies.

In addition there were scores of outboard runabouts with convertible bunks and marine toilet for overnight excursions. This type is widely becoming known as a "day cruiser," but does not qualify as a full-fledged cruiser because they lack cabins and three basic requirements—sleeping, eating and toilet facilities.

For the first time in six or seven years, there was a molded plywood outboard cruiser in the show, manufactured by Molded Products of Cockeysville, Md. Could be this is a new trend.

SAILBOATS—The biggest sail boat fleet ever gathered under one roof, a whopping total of more than 75 windjammers with 19 cruising craft and 60 one-designs representing about 50 classes, was on display at the Golden Anniversary Show.

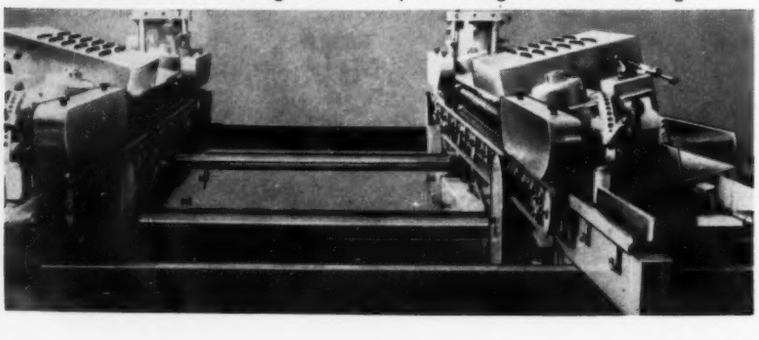
This fleet included about 40% more sailboats than were on display last year. One of the big reasons for this big surprise is the growing nationwide popularity of Midget Ocean Racing Clubs (MORC)—competition for small cruising sailboats.

Band Automatically with IMA

The only straight-line production machine that bands veneer and plastic by automatic methods . . . The IMA Edge Bander exactly indexes strip from hopper, glues panel edge, positions band on edge, cures glue with heat while under pressure, then trims excess band width accurately and cleanly. Simple induction heat is used (not high frequency). IMA can replace five conventional edge banders. 40 installations U. S. A. and Canada.

One side of two panels banded simultaneously

New model IMA bands edges beveled up to 15 degrees or vertical edges

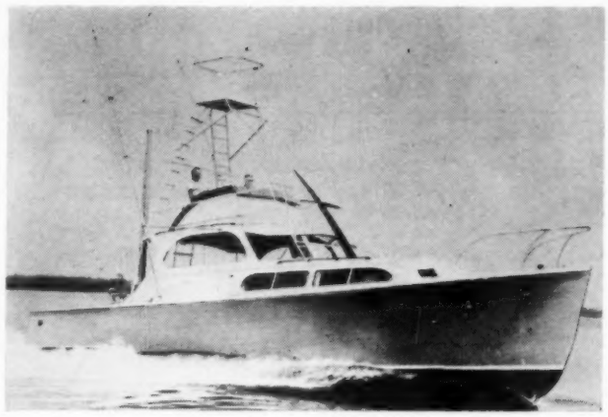


NEW double-length IMA—two machines in one for more than double production of standard IMA and for heavy plastic banding.

Write, wire or phone

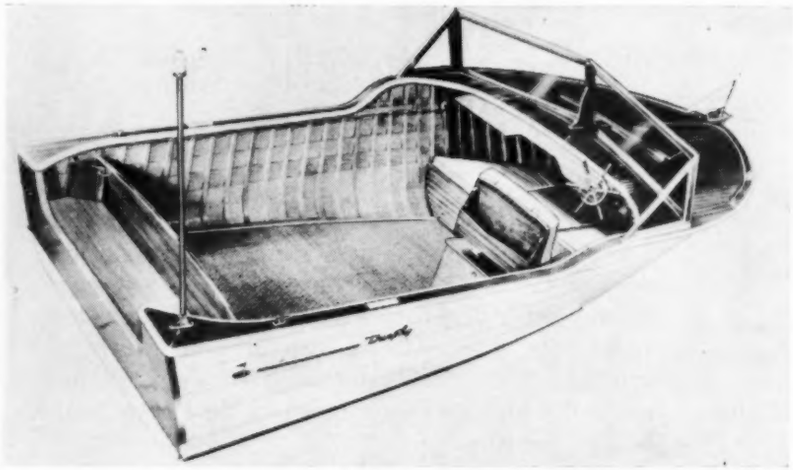
wilco machine works, inc.

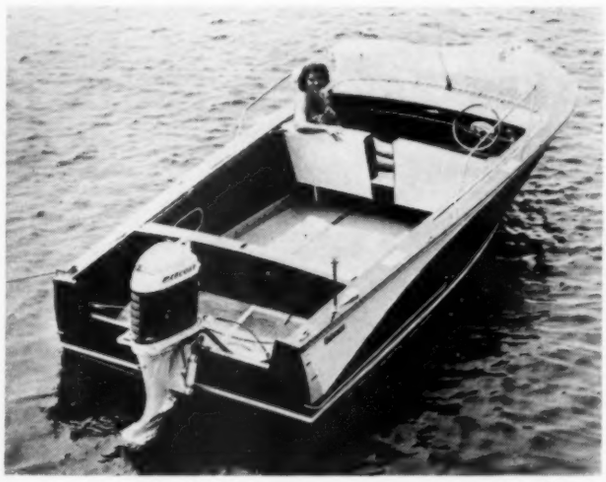
Box 3722 • Municipal Airport • Memphis, Tenn.
WH 8-4555



For the first time since World War II, Cris-Craft Corp., Pompano Beach, Fla., exhibited at the National Boat Show as a manufacturer. This 32′ craft has Philippine mahogany lapstrake construction and living accommodations for six.

Engineered by C. P. Leek & Sons, Inc., Lower Bank, N.J. this boat (left) was especially designed for all types of fishing. She is carvel-planked with clear cedar over oak framing, keel and stem.





One of the most versatile outboard crafts (above left) was displayed by Dunphy Boat Corp., Oshkosh, Wis. This 19′ open lapstrake boat converts with a canvas top to a fully enclosed overnighter for four.

This 35′ yawl (above right) of the Thomas Knutson Shipbuilding Corp., Halesite, N.Y., has electric refrigeration, three-burner stove, teak decks and seats. Hull is of oak and mahogany. Auxiliary power is provided by gasoline engine.

Driver wanted: apply to Hi-Liner Boat Corp., Ipswich, Mass. This 19′ outboard has disappearing side windows, marine plywood construction over white oak longitudinal framing and solid mahogany decks and cover boards.

Every year the talk about safety on the waterways becomes more urgent. By the way, this is a good argument in favor of wooden boats, because they can be easily and quickly repaired almost anywhere.

Margery P. Killingsworth of Edison, Ga. who has four seagoing kids of her own, is a strong believer in boating safety. Recently, while reading a manual on this subject, she decided to translate the rather formal safety rules into language that even a child could understand.

Here are a few examples:-

Formal Text: Have an approved life preserver for every person aboard.

Mrs. Killingsworth's translation:

Cock-a-doodle-doo!
A lifebelt just for you
May mean that you will keep afloat
And, shipwrecked, live to sue.

Formal Text: Do not venture into dangerous waters, particularly in areas close to dams.

Mrs. Killingsworth's version:

Peter, Peter pumpkin eater,
Had a boat but couldn't keep her,
Too close to dam, too far from shore,
Now he don't have no boat no more.

TABLE I

GROWTH OF BOATING	1957	1958	1959
Persons estimated to have taken part in recreational boating more than only once or twice.	34,000,000	37,000,000	39,000,000
Recreational boats in use.	6,954,000	7,333,000	7,800,000
Retail expenditure on pleasure boating.	$1,912,000,000	$2,085,000,000	$2,475,000,000
Square feet of sheet plywood used: Fir.	124,000,000	142,000,000	165,000,000
Other Hardwood Plywood.	25,000,000	29,000,000	33,500,000
No figures are available on how much solid lumber was used for pleasure craft.			
Motor unit sales, outboard.	550,000	545,000	540,000
Outboard motors in use.	5,140,000	5,525,000	5,845,000
Boat trailers sold.	165,000	169,000	175,000
Outboard boats sold.	320,000	316,000	329,000

(All statistical information taken from the joint report of the National Association of Engine & Boat Manufacturers and Outboard Boating Club.)

This hilarious collection of "Mother Goose of Water Safety" originally appeared in *Outboard Magazine*, Jacksonville, Florida. The poems are available in brochure form from *Outboard Magazine*.

TABLE II
TYPES OF BOATS SHOWN

	1958	1959	1960
Wood	274	233	258
Plastic	95	166	182
Rubber-Canvas	—	11	21
Aluminum	82	67	63
Steel	4	4	—
TOTALS	455	481	524

(Note: In 1960 not a single steel boat was shown)

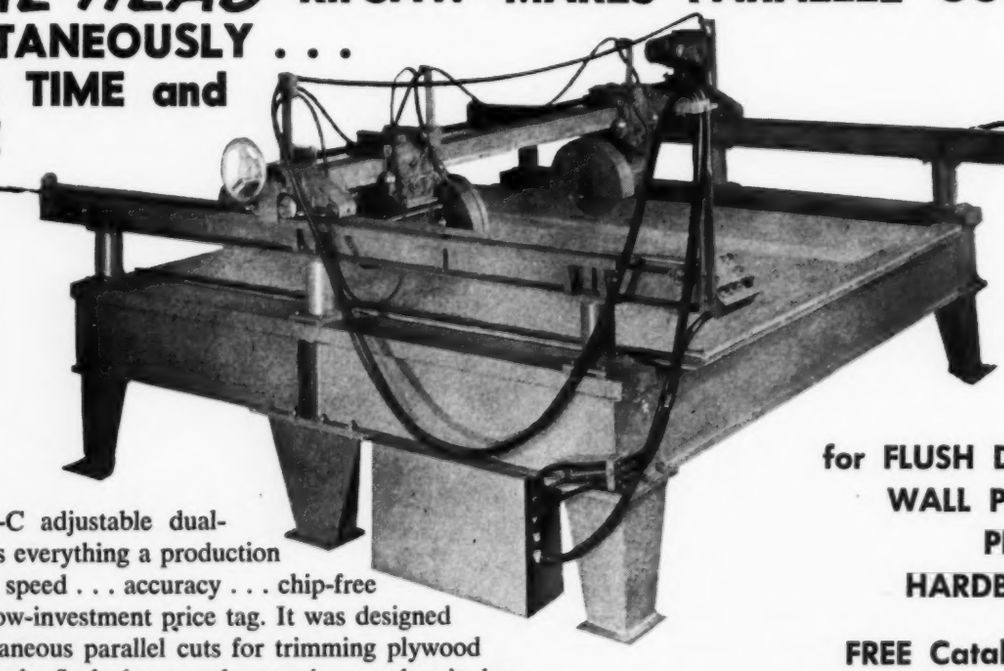
TABLE III
BREAKDOWN OF WOODEN BOATS SHOWN

	1959	1960
Lapstrake	101	103
Sheet Plywood	73	88
Smooth Wood Plank (Carvel)	37	39
Molded Plywood	22	28
TOTALS	233	258

Trial By Lab

On the more serious side, Carlisle H. Boger, president of the Yacht Safety Bureau, announced that the Bureau is negotiating for the purchase of a desirable site in the Atlantic City area on which to construct testing laboratories to be used for an evaluation and labeling program for the recreational boating industry.

DUAL HEAD RIPSAW MAKES PARALLEL CUTS SIMULTANEOUSLY . . . SAVES TIME and SPACE



This new 144-C adjustable dual-head ripsaw has everything a production shop needs . . . speed . . . accuracy . . . chip-free cutting and a low-investment price tag. It was designed to make simultaneous parallel cuts for trimming plywood sheets, wall panels, flush doors and masonite . . . but it does so many jobs we can't list them all. The 144-C features two 5-HP arbor motors, 10 point roller bearing transverse travel, synchronized electronic power feed, cuts up to 7′ wide by any length and calibrated tape guide on cross rail.

for FLUSH DOORS
WALL PANELS
PLASTIC
HARDBOARD

FREE Catalog

TY-SA-MAN Machine Co., Inc., 1049 White Ave., Knoxville, Tenn.

Ty-Sa-Man
SINCE 1885

There are three distinct parts to this program.

First, the development of an accepted, advisory code of practices and standard for safety of boats and their equipment.

Second, an equally accepted, strictly independent and voluntarily used evaluation and review service for boat materials and items of boat equipment.

Third, a labeling program giving public evidence of the manufacturer's adherence to the accepted standards.

This whole project should be of tremendous interest and importance not only to wood boat builders, but *To The Entire Woodworking Industry.*

Who knows—perhaps they will discover for us new, great, wonderful and totally unsuspected superior qualities in Wood.

You bet, as soon as this laboratory is in operation I shall be down there snooping and reporting back to you.

Shattered Records

Exhibitors reported that the 12-day show produced $32,000,000 worth of orders, up about 18% from last year.

Orders were taken for more than 22,000 boats, totaling $13,000,000. Outboard and inboard engine orders were estimated at $12,000,000, while equipment vendors sold approximately $7,000,000 worth of hardware, electronic aids and other accessories.

And so we enter the "SAILING SIXTIES."

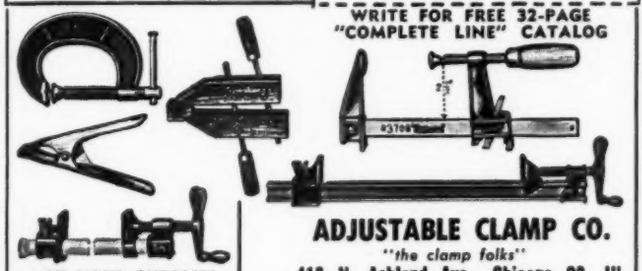
Nautically yours,

N. (for "Neptune") Nash

"Jorgensen" and "Pony"

CLAMPS

WRITE FOR FREE 32-PAGE "COMPLETE LINE" CATALOG



ADJUSTABLE CLAMP CO.
"the clamp folks"
418 N. Ashland Ave., Chicago 22, Ill.

ASK YOUR SUPPLIER

FOREST CITY

FAST DELIVERY

Stock items shipped within 24 hours . . . Special tools delivery unsurpassed. Our reputation stands on quality and service that save money in your machine room.

FOREST CITY BIT & TOOL CO.

HICKORY, NORTH CAROLINA . . . . PHONE: DIAMOND 5-7124

HIGH SPEED STEEL Customers report up to 60% tool cost savings with our high speed steel numbers. Available on most tools.

WRITE FOR FREE CATALOG

FOR PROFIT STANDARDIZE 100% ON SOUTHERN FASTENERS

It's a safe bet this man is enjoying a profitable operation because he uses Southern Screws. Southern fasteners are profit-partners in companies who use them because Southern quality, service and packaging combine to help keep your production lines operating at top speed without costly downtime, materials loss, injury, or rejects due to faulty fasteners. Southern are specialists in fasteners — make nothing else!

Standardize on Southern Screws for profit! Send your next fastener order to Southern Screw Company, P. O. Box 1360, Statesville, North Carolina.

Manufacturing and Main Stock in Statesville, North Carolina. Warehouses: New York • Chicago • Dallas • Los Angeles.

Southern SCREW COMPANY STATESVILLE • NORTH CAROLINA

Wood Screws • Stove Bolts • Machine Screws & Nuts • Sheet Metal Screws • Carriage Bolts • Wood Drive Screws • Dowel Screws

around the shop

This monthly feature answers readers' questions on common shop problems. If you wish to present a problem, or desire further discussion of problems discussed here, write to the Editor.

How To Machine Tenons

We have an order to duplicate an old chest which was made with interlocking tenon joints. Since we cannot take this chest apart, we would appreciate information on how to machine the tenons on the rails to interlock the corner posts.

We finally found an antique furniture dealer who was familiar with this type of joint. He calls it a concealed dovetail tenon joint. The tenons are made in the customary manner to fit the mortises in the posts. To make the concealed dovetail on the ends of the tenon so that one rail locks the other, a dovetail pin or male member is cut on one tenon and a dovetail socket or female member is cut on the other. With the mortise made through from both sides, the tenon will mesh when properly glued and driven in place to provide a self-locking and durable concealed joint.

Impregnating Wood With Metal

We have just received a large order for wooden bearings to be impregnated with metal. While we are acquainted with the general impregnation process, we would like to know the critical temperatures involved.

Wood will sustain higher temperatures when immersed in molten metal than when it is heated in the air. There are two roughly defined temperature limits: the lower one representing the melting or solidifying temperature of the metal alloy used; the higher, the charring temperature of the wood being impregnated. Most of the metal alloys commonly used for bearings will melt at temperatures below the boiling point of water. High or ignition temperatures will vary with wood species and exposure time. Porous lightweight wood species are generally more susceptible to heat damage than the dense heavier species.

It is common practice to use a preheating period to heat the wood throughout before increasing to maximum treating temperature. A concern specializing in metal impregnated wood bearings reports the use of a preheating temperature starting at about 265°F., raising to a treating temperature of about 400°F., and cooling back to about 350°F. during the pressure period.

How To Remove Corns

We use power operated rubbing machines to rub as many of our furniture parts as possible. A lot of downtime and some poor rubbing results from corns which form on the rubbing pads. These corns are small areas of finish build-up which have to be removed by means of hand scrapers, similar to those used for clean-up operations in the cabinet department. Can you suggest a better method for removing these corns from the pads?

A foreman of the rubbing department in a midwest furniture plant has adapted a number of old fashioned metal scrubbing boards for this purpose. These boards are securely attached to the work table at one end clear of the work and rubbing pads are rested on their corrugated surfaces when not in use. When the operator is about ready to run another furniture piece, he starts the machine and holds the pads down firmly on the corrugated surface while the pads move back and forth to remove any finish accumulations which may have been formed, before starting the next rubbing operation. The corrugated surface of each board is cleaned at regular intervals by flushing or scraping off the corns.

Can We Speed Up?

We manufacture clock cases and other wooden novelty items involving the use of thin molded plywood bonded to solid wood frames. It has been suggested that the use of resistance heating units might speed up the assembly of these items at a lower cost than

high frequency or other forms of heating. How does this heating system operate?

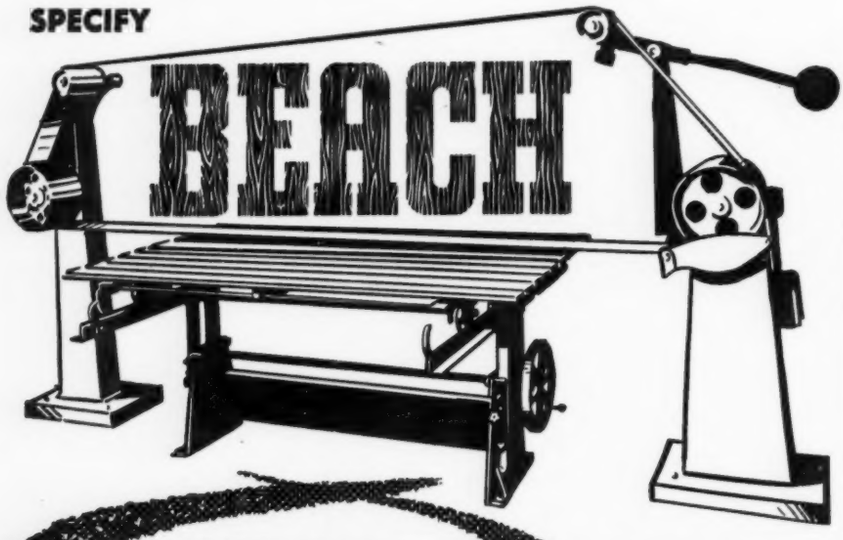
Resistance heaters operate with a low voltage electric power supply transformer, rated at 1.5 to 3 KVA, with tap switches to vary output voltage for quick adaptation to various lengths of flexible stainless steel heater strips (heating elements) which operate at temperatures of 300 to 350°F. to cure adhesive bonds with a pressure period of about 1-5 minutes. Heat is generated by passing low voltage current (110V or 220V line current) through the heating element after conversion by the transformer.

In a typical installation pressure assembly jigs made to hold the assembly under pressure and heating strips are inserted along the area of the glue lines, with terminal bars fastened to each end. Cables are connected to these terminals and the transformer to carry low voltage current through the strips. This generates heat which completely cures or sets the glue bond sufficiently to permit handling out of the jig for subsequent curing at room temperature and residual heat.

Users appear to prefer heat-sensitive urea resin glues for faster curing, stain-free, low cost bonds. There is no danger from shock or burns with these units and no shielding is required. A single resistance heating unit has capacity to heat up to 32 lineal feet of narrow strips, in some cases representing heating for 6 jigs, depending upon the size of the construction to be bonded. Best results are obtained by using the lowest voltage that will cure the glue bond during the required curing cycle.

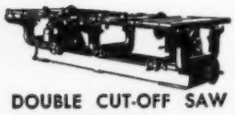
The size unit required is determined by computing the total square inch area of heating elements (strips) to be heated at one time. A 1.5 KVA heating unit will heat up to 300 square inches; a 3 KVA unit, up to 600 square inches. Standard strips sizes range from 1½"-3" in width and up to 16' long. For heating thin plywood in molded form on only one face, special heating elements up to 14" wide and 8' long have been used.

SPECIFY



HAND BLOCK
BELT SANDER

Designed and built to give uninterrupted, trouble-free service, this versatile machine solves a variety of finishing operations – for sanding and finishing wood products; and for products made from aluminum, brass, bronze, stainless steel and plastics. Sturdily built, 42" x 80" table mounted on anti-friction rollers; standard 2 HP, 2 or 3 phase ball-bearing motor.
The Beach Hand Block Belt Sander is already in use by over 1000 leading industrial firms! You will be amazed at the economical, efficient operation . . . the initial low cost!


DOUBLE CUT-OFF SAW

TILTING TABLE SAW

SHAPER

BEACH
MANUFACTURING CO.
MONTROSE, PA.

Write today-
for full details on Beach Hand Block Belt Sanders and the complete line of Beach woodworking machinery.

Will Heat Kill Borers?

Some of our timbers out at the mill show evidence of powder-post beetles. I have been told that a high temperature treatment in the dry kiln will effectively kill any borer in the wood. If this is true, what is the temperature required for this treatment?

Most authorities agree that a temperature of about 180°F. is required to kill many of the borers. Special treatment is usually provided at the end of the kiln run, with the high temperature held for at least an hour. If the moisture content of the wood to be treated is in a range of 10 to 12%, this treatment is extended to three hours at some plants, with appropriate wet-and-dry bulb settings. A moist heat treatment is sometimes used in which kiln temperature is raised to about 130°F. and maintained with about 100% humidity, as live steam is introduced into the kiln for periods ranging from two and one-half hours for 4/4 stock up to six and one-half hours for 12/4 stock. While these treatments will kill the beetles, they will not prevent reinfestation.

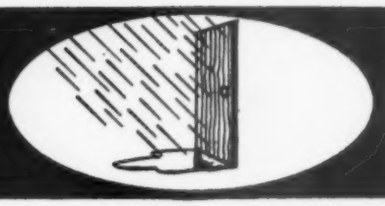
What Is A Grooved Sticker?

A speaker at a recent dry kiln club meeting mentioned a grooved sticker used by a midwest lumber

SPEED PRODUCTION

LOWER GLUE COSTS

Increase Water Resistance



. . . . with PERKINS 8523 CASEIN GLUE

Perkins 8523 Casein Glue, a blend of several adhesive materials, offers manufacturers of flush doors an opportunity to speed up production and increase water resistance at a lower glue line cost!

The formulation also offers advantages in other panel-to-frame gluing operations as well as in veneering and in laminating.

With Perkins 8523, pressure periods of up to one hour are sufficient. Overnight stacking is recommended for best results but less time is possible where necessary.

The glue line complies with the two cycle soak test called for by Commercial Standard CS 171-58 as well as the Type II and Type III requirements of CS 35-56. Actually, the bonds obtained with the Perkins 8523 formulation have given far better results than the Commercial Standards require.

The mixed glue cost of the formulation is much lower than that of other glues with fast set and high water resistance, representing a considerable saving to most glue users. It has a pot life of 6 to 8 hours, depending upon room temperature. Storage life of the unmixed Perkins 8523 is from three to five months.

It should be emphasized that Perkins 8523 is not an ordinary casein glue. It is a carefully prepared blend of casein with other materials having desirable adhesive properties.

Samples of the formulation are available for your tests or the Perkins service representative in your area will be glad to conduct a demonstration in your plant to prove the advantages you can obtain with Perkins 8523.

PERKINS GLUE COMPANY

Lansdale, Pennsylvania

PLANTS IN LANSDALE, PA.; SHAWANO, WISCONSIN; HIGH POINT, N. C.; WEST MEMPHIS, ARK.; KITCHENER, ONTARIO and LA CHUTE, QUEBEC

Porter-Cable

Quality Power Products

BUILT FOR THE TOUGH JOBS . . .

Porter-Cable "CONTINUOUS-DUTY" BELT SANDERS

Engineered by the world's largest manufacturer of Portable Belt Sanders, both the Model A-3 (illustrated) and the Model 503 with vacuum system are built for all industrial trades that demand a big-capacity sander that can "produce" all day, day after day.

These professional sanders offer more power, larger capacity, and more advanced features . . . such as double sprockets on jackshaft and drive pulley to increase life of chain, superior motor with stronger core to take heavier loads without burnout, special steel wear plate, precision ball bearings, one-knob tracking adjustment, special tensioning device for quick belt changes.

For heavy-duty millwork, cabinet shops, building trades . . . for fine finishing or fast rough sanding . . . see these professional Belt Sanders at your Porter-Cable dealer.

PORTER-CABLE MACHINE COMPANY

6193 Marcellus Street, Syracuse 4, N. Y.

Porter-Cable
BIG TRADE-IN SPECIAL

Limited Time Only!*

NOW—any old sander is worth $30.50 in trade on a new Model A-3 or Model 503 Porter-Cable Belt Sander.

Model A-3, reg. $130.00
Trade-in allowance 30.50
NOW... Costs you only $99.50

Also, for example: Model 503, regularly $160.00 now costs you only $129.50 with trade-in allowance.

If you're wasting valuable time with a sluggish, beat-up sander... if you are holding up production with breakdowns . . . If service problems are a nuisance . . . NOW IS THE RIGHT TIME TO SEE YOUR PORTER-CABLE DEALER and start saving money right away!

FREE illustrated catalog of Porter-Cable Power Tools, including complete belt sander line.

*Offer expires May 13, 1960

Porter-Cable
Quality Power Products

Porter-Cable Machine Company
6193 Marcellus Street
Syracuse 4, N.Y.

Please send me your free Power Tool catalog.

Name_____

Company_____

Address_____

City_____ Zone____ State____

company which has 60% less contact with the lumber than the conventional flat sticker. Can you describe this sticker and tell me how it is made?

This grooved sticker was reportedly developed to allow air circulation under the sticker, not possible with the conventional flat sticker, and to provide minimum contact with the lumber to reduce the possibility of sticker stain marks. It is prepared at the molder to a 2" width and ⅞" thickness, with a 1⅜" groove cut in the center to leave 5/16" contact edges. The groove, itself, is made on a 1¾" radius.

What Is Standard Shrinkage?

I am serving as apprentice in a patternshop where I find the patternmakers rather reluctant to share their trade secrets. My current problem is proper shrinkage allowances which have to be made to compensate for casting contraction, specifically in making a pattern for a cylindrical casting. Can you give me the standard shrinkage allowances?

Standard shrinkage allowances used by patternmakers for the various metals used are: 3/32" to 1/8" per foot of cast iron, 3/16" per foot for steel castings and common brass, 7/32" for yellow brass, 5/32" for bronze, and 7/32" to 1/4" for aluminum. In making patterns for cylindrical castings it is customary to make about 1/10" lengthwise shrinkage allowance and from 1/20" to 1/16" radial allowance. In the same metal, heavier castings may shrink about 1/10" per foot and lighter castings as much as 1/8" per foot.

Which State Produces More Ash?

I recently blew up a storm by stating that ash lumber is produced in more states than any other single species. Can you help me prove this statement? Which states now produce ash lumber?

If you will qualify your statement to "any other single species of hardwood," you are probably correct. In a general species category pine probably is produced in more states. A recent lumber production report by states shows pine produced in 40 states, ash in 28 states. The ash-producing states included: Alabama, Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin.

Will Intercooler Work?

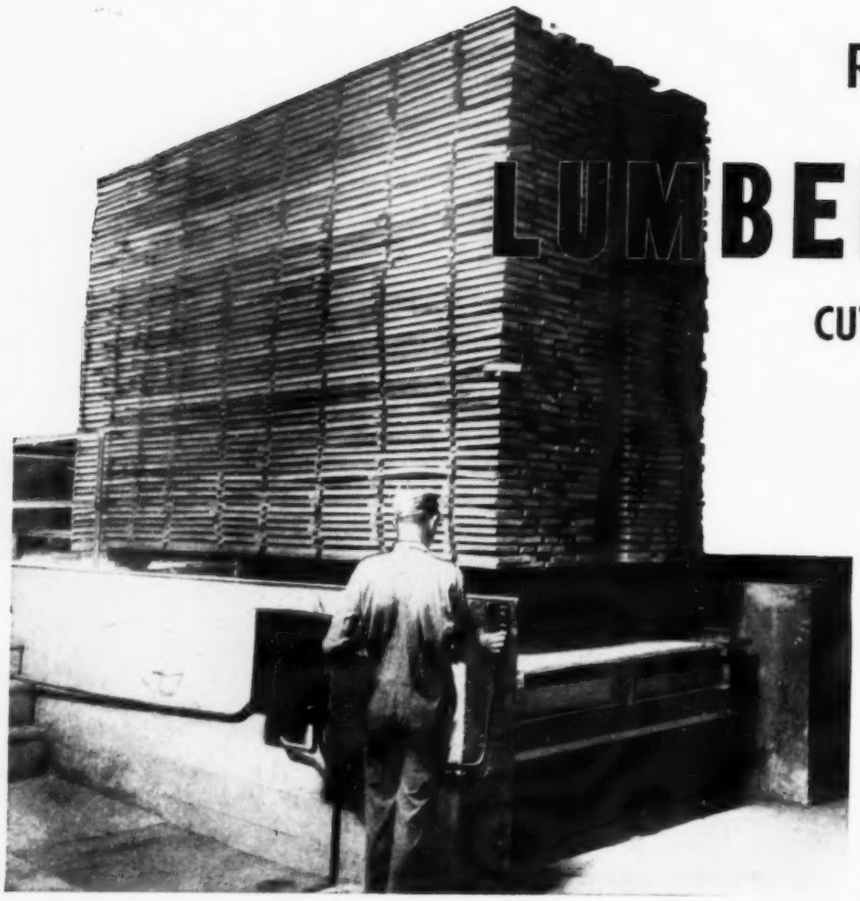
Our air system gives trouble with moisture in the receiver and an engineer called in to service the problem recommends the use of an intercooler. Would this be adequate to remove this moisture?

Compressor intercoolers are frequently used to condense the major portion of the moisture in the air. It is important, however, that the condensate be drained off before it has a chance to enter the next cylinder. It is well to install a moisture trap on the intercooler to insure positive drainage. Many plants equip both the aftercooler and receiver with traps to remove the condensate as soon as it forms to ensure the dryest air possible.

What Abrasive Should We Use?

We are required to use a washcoat to provide proper hold-out on the wood surface against excessive stain penetration in a new finishing schedule. Sanding this washcoat without cutting through is our immediate problem. What abrasive do other finishers use for this hand sanding operation?

Regardless of the abrasive used, washcoat sanding should be done with just slight applied pressure to avoid sanding through. Most plants use garnet finishing paper for washcoat sanding in grits of No. 7/0 (240) or No. 8/0 (280). If cutting through is critical, substitution of an aluminum oxide abrasive may be effective.



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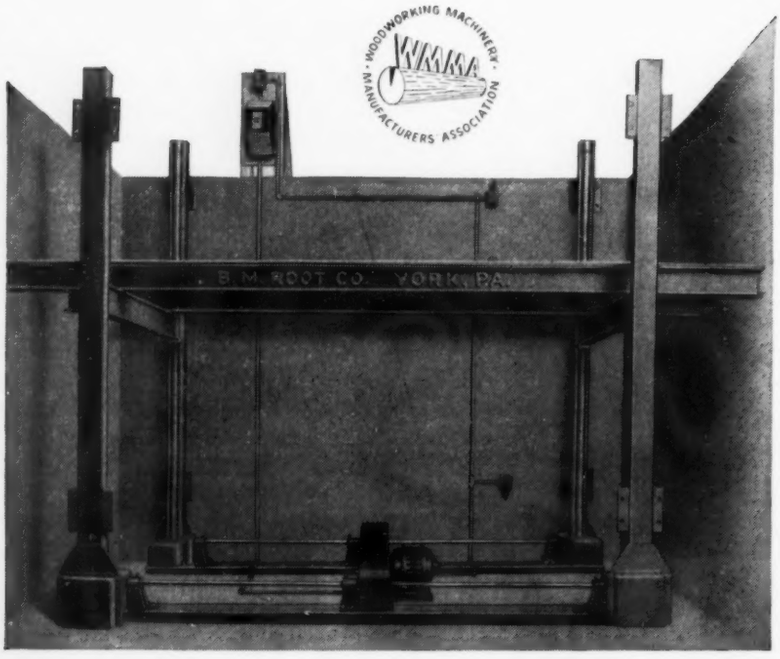

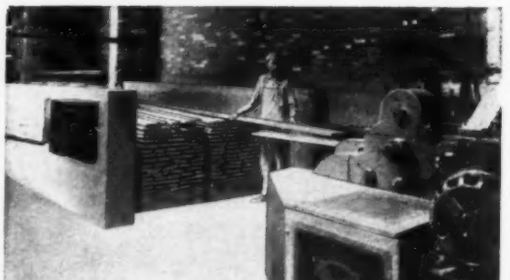

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What Are The Relationships Of Feed Speeds For Cutting Tools?

By L. H. Reineke

Technologist, U.S. Forest Products Laboratory

■ In working with machines for cutting wood or metal, it is frequently desirable to analyze the interrelationships between the number of cutting edges of the tool, its speed, and the feed per cutting edge or per minute.

To simplify straight forward single computations and to facilitate the exploration of the effect of changing the speed, feed, or number of cutting edges, the alignment chart presented here was prepared.

This chart is applicable to rotating cutters of few to many cutting edges, such as shapers, planers, cylinder or disk chippers, milling cutters, and circular saws for metal or wood. It is also applicable to linear multicutting-edge tools, such as band and chain saws. The extensive range of values provided by the scales for the interrelated factors can be extended further by multiplying or dividing the scale values by 10 to accommodate the high rotational speeds of air-driven routers or the very slow feed rates of drills and augers.

The key under axis B shows how the chart can be used to determine the fourth factor when the other three are known. When two factors on opposite sides of the blank axis C are fixed, all possible combinations of the remaining two factors can be obtained by properly pivoting the second interceptor line.

The interceptor lines are shown in the key. The interceptor line (which can be a straightedge) is passed through the proper values on the A and E axis, and the point of interception with the blank axis C is held by a needle. The straightedge is then pivoted around the needle until it passes through the proper value on axis B (or D), and the unknown value is read from axis D (or B). By pivoting the second interceptor around the needle, all possible pairs of B and D values may be read. The procedure is reversed when B and D are known and either A or E, or all pairs of A and E values are to be determined.

Precautions in using the chart are few. When the "No." scale of axis A is used, the scale of axis E must be read in terms of revolutions per minute. When the "Spacing" scale of axis A is used, the scale of axis E must be read as a scale of band, chain, or rim speed in "Ft. per Min." For end-cutting tools (mills, drills, disc chippers), spacing cannot be used because it varies with radius and is zero at the center, hence "No." of cutting edges and "r.p.m." must be used.

When cutters cut alternately, as with spring-set saws, the "bite" value on axis B is the feed per tooth. The feed between successive right-hand teeth or successive left-hand teeth is, however, twice this amount. This may be determined directly by entering the "No." scale of axis A with the number of pairs of left and right teeth, giving the chip dimension in the feed direction (except for any notched rear inner corner removed by the preceding tooth).

Values of bite are always in terms of distance in the feed direction, whether knives are straight or helical, whether the axis of the cutterhead is at right angles to the feed direction or skewed, and whether the feed is vertical (drills, etc.), sloping (chippers), or horizontal (saws, planers, rotary-head barkers).

Feed is assumed to be positive and uniform. When the cutting tool limits the bite per cutting edge, as in gravity-feed disk chippers, a theoretical feed can be computed from the knife setting. Thus, for a 4-knife chipper at 600 r.p.m., with knives set for a 0.5″ chip length, the theoretical feed rate will be 100 f.p.m. If the lengths of a sample of chips are measured, their average value may be used to read a corresponding average feed rate from the chart.

Surface quality is largely dependent on the spacing of the successive cuts that produce the sur-

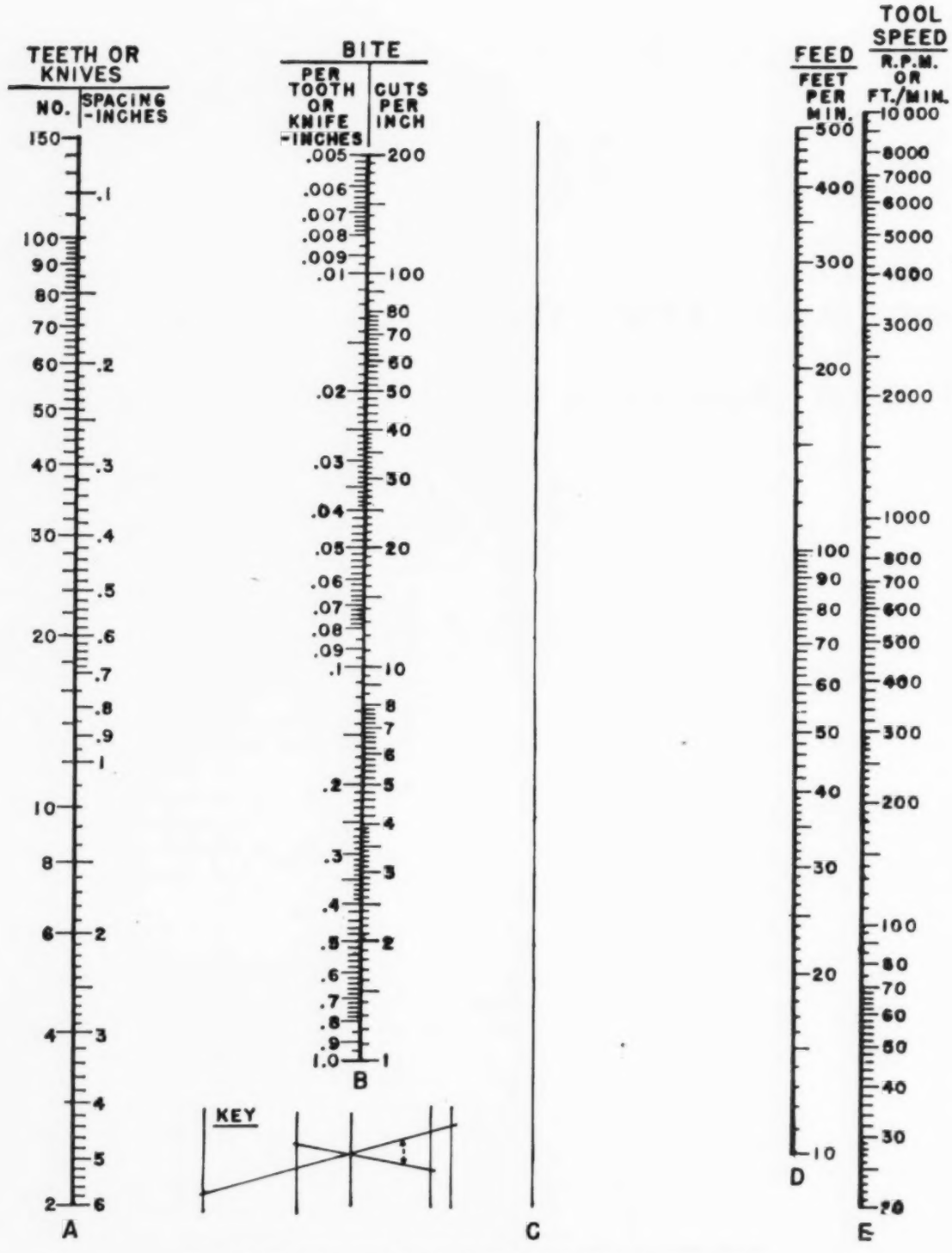

Figure 1. Chart for computing feed-speed relationships for cutting tools.

face; power requirements and the forces on the cutting edge are affected by the thickness of the chip removed; chip storage requirements for tools buried in the workpiece, such as saws, are determined partly by chip thickness; and the rate at which cutting edges are dulled is strongly influenced by the number of cuts required to remove a given volume of material. Numerous combinations of feed speed, tool speed, and number of cutting edges on the tool may be used to obtain a given value for chip thickness. Conversely, various chip thicknesses may be used with a pre-selected value of a second factor to determine the appropriate combination of the remaining two factors.

A saw operator having a machine with one spindle speed and one feed speed could make a simple analysis of the interrelationship of these four factors to determine the possibility of producing sawdust of a specific size for a certain market. From the feed and spindle speeds, and the bite per tooth set by the sawdust particle size, the required number of saw teeth may be calculated.

More complex situations may arise. Operations may involve a production line moving continuously with, perhaps, one machine

feeding two machines in parallel. Further along, their output may feed a single machine in a third step. Assume the first machine is a straightline ripsaw making glued-up stock, such as lumber cores or shelving, for gluing in the second stage directly from the saw. The feed speed through the saw must be high enough to keep ahead of the supply rate; yet the bite per tooth must not be so large that it will produce a torn gluing surface, nor so small that the saw will dull quickly and produce a gluing surface weakened by the battering of rounded tooth corners. Suitable combinations of spindle speed and number of saw teeth can be selected, with possible modification of bite per tooth, by increases in feed speed above the minimum established by the raw stock supply rate.

After the two-machine gluing-up stage, the third stage may involve a planer, in which the feed rate must be at least equal to the supply rate. The chip thickness during planing will be unregulated and variable to the extent of the thickness removed, but ordinarily chip thickness will be within safe limits. The spacing of the cuts, however, may have a profound effect on the product, since the cylindrical cutterhead makes a series of cuts that form very shallow, sharp-crested waves. An increase in the spacing of the cuts or knife marks produces an even greater increase in crest height. A small number of cuts or knife marks per inch results in high, widely spaced crests that are readily visible and may even show through a thin veneer surface or paper overlays. A large number of cuts or knife marks per inch results in low-crested, shallow marks that are not readily visible and may be satisfactory for painting without further machining.

The planer stage thus requires the selection of the number of cuts per inch that will produce an acceptable surface. This factor, plus the feed rate already established, will permit the selection of a suitable combination of the number of knives in the cutterhead and its speed in r.p.m. □

DIAMOND LUMBER CO. reports...

"We Sand and Polish 14 Door Skins per Minute!"*

TIMESAVER® SPEEDBELT SANDERS

*That's the amazing production report made by E. R. Knokey, General Mgr., Plywood Div. of the Diamond Lumber Co., Tillamook, Oregon. Here's the story:

"The line of Timesaver Model TOP Speedbelt Sanders that we have installed are used primarily for sanding door skins. The skins are mostly 3 ply plywood made from Rotary Phillipine Lauan and range in size from 18" to 48" in width and from 72" to 82" in length. We sand and polish approx. 14 door skins per min. and do an excellent job."

When not running door skins, Diamond Lumber uses the Timesaver line to sand hardwood plywood panels which are normally ¼" to ¾" thick and 4x8 ft. in size. Woods in this category are Mahogany, Walnut, Cedar, Ash and various other hardwood species. Results on these materials are also excellent.

Other manufacturers such as *Anacortes Veneer, Inc.* and *Aberdeen Plywood and Veneers, Inc.* are also using Timesaver "Speedbelt" Sanders in their finishing operations. These are only a few of the many Timesaver installations where manufacturers are achieving savings in labor and materials while producing the desired top quality finishes. Whether your production requirements call for a single machine or a series set-up, you, too can enjoy the advantages of wide abrasive belt sanding at a minimum cost.

Write Today . . . get the facts and the figures on how the amazing Timesaver "Speedbelt" Sander can do your job . . . better and at less cost.

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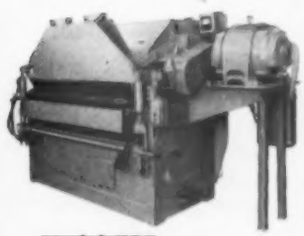
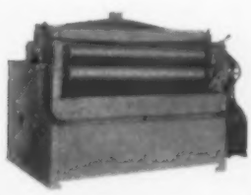


Model TOP

Available in belt widths of 24", 36", 50" and 54". Sanding action is overhead.



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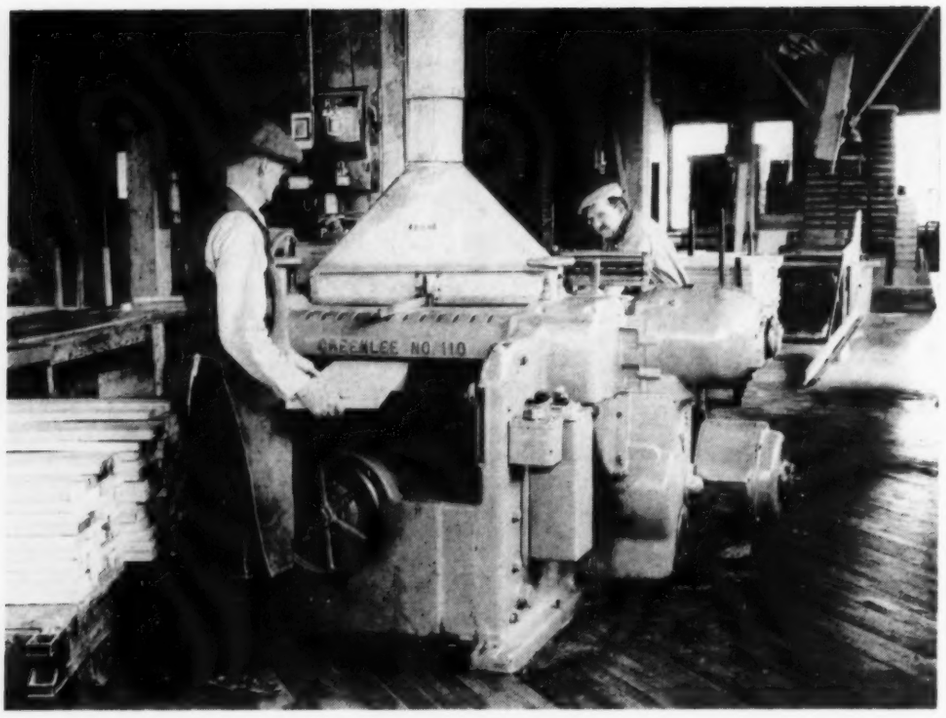

View of modern Greenlee surfacing planer, dressing hardwood stock which has been preliminarily glued together edgewise to make wider plates. Unless thicknesswise grain direction is kept the same on all component pieces in each plate, the planer man is helpless in regard to dressing the material with the grain.

Processing Cross Grained Material

■ Cross grain, or short grain, as it is sometimes called, is inevitably weak grain, whenever it occurs in single-thickness lumber. Short grain in any one of the plies incorporated in plywood is always well supported by long grain on adjacent plies. Therefore, the matter is not serious where plywood is concerned. That is a chief reason plywood is much employed for specific duties where it is highly desirable to avoid short-grain weakness. Nevertheless, it is not always possible to use plywood: there are cases where plywood edges would be revealed with an unsightly effect.

There is a compromise measure which can readily be used. Plywood as generally used has the grain of adjacent plies running substantially at right angles to each other. However, special stock (which is really plywood) can be plied up to add strength, while laying all pieces with grain of the material running in the same nominal direction. Strength advantages are nevertheless gained, simply because no two pieces of material have their grain direction *precisely* alike.

When two or more pieces are plied up with their grain running nominally in the same direction, *some* crossing of grain occurs in adjacent plies; this adds a surprising amount of strength to such material. Two pieces of stock 9/16″ thick, for instance, glued together with their grain running nominally in the same direction, are stronger and safer to employ than a single piece of material 1⅛″ thick would be. Three pieces of material, each ⅜″ thick, plied together in like manner, will be yet stronger.

Too Great Economy Can Cause Loss

Sometimes, men laboring under a mistaken idea of economy incorporate short grain in products. Some cutoff saw operators, for instance, in cutting off stile and rail material for incorporation into framed-up work, cut too close against knots. Whenever there is a knot of any appreciable size in a piece of lumber, the grain inevitably curls quite decidedly in its immediate vicinity. This means cross grain at that particular location.

If one is cutting off rails which will be joined to stiles by dowel construction, such short grain will be further weakened when boring through it. Sometimes such pieces break while being bored, or while dowels are being driven. Short grain is just as bad where rails are being cut for mortise-and-tenon construction. Tenons must be cut on extreme ends of the pieces. If the sawyer cuts very close to knots, leaving short grain at these points, the rails will have very weak tenons. It is far better economy to lose two or three additional inches of lumber on each side of a knot than to incorporate short grain at ends of either stiles or rails.

Short-grain fibers may occur thicknesswise of a board, width-

• SELECTION • S
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is accomplished efficiently
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using automation to produce...

Eminence in Veneer
at competitive cost

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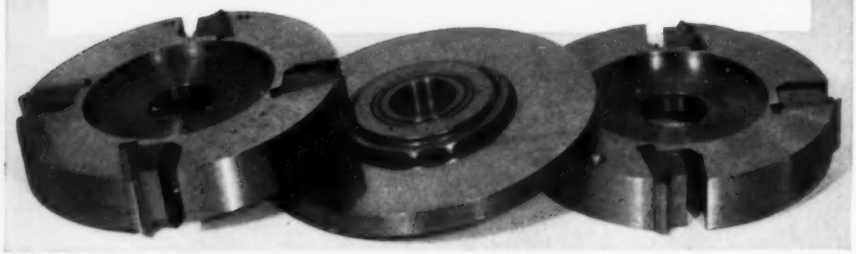

The Problem: A leading plant was producing panels by laying a thin face of veneer on both the sides and edges of a ½"-thick core. Before the edges could be veneered, however, excess veneer on top and bottom had to be trimmed flush with the core. This led to excessive burning of the core's edges.

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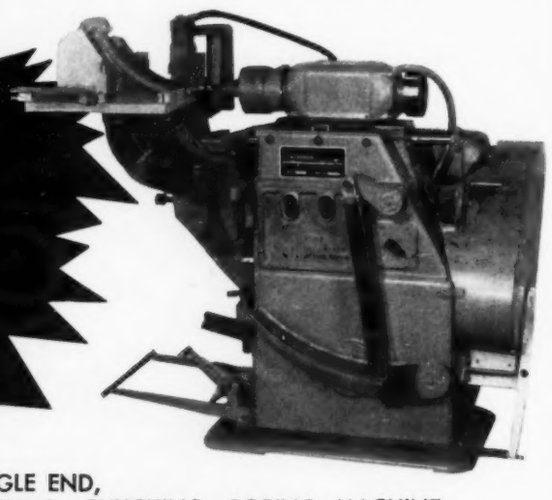

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With feed rates up to 30 pieces per minute and set-ups in less than one minute, the RICHARDSON "LB" will certainly prove to be a worthy member in your production line. Small lots which would not warrant a double end setup are run efficiently on the "LB". *Send for complete information and specifications, right away, without obligation.*

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wise, or a combination of both. Skilled woodworkers learn to distinguish the direction of grain fibers; they know due consideration must be given to grain direction in machining. As an instance in point, consider wide plates made up from lumber by edge gluing several narrower pieces together. This is widely and necessarily practiced in furniture plants, planing mills, etc.

After the material is glued together edgewise, and the glue has set, it must be processed through a planer for surfacing. On hardwoods, where short grain often tears badly if stock is run against the grain at the planer, it is very important to carefully arrange all pieces of material in the same plate so their thicknesswise grain-fiber direction is the same. This can be done by turning specific pieces either "side for side" or "end for end" in respect to the balance of the layup.

Obviously, when a plate is glued up with thicknesswise grain-fiber direction running one way in part of the pieces, and the opposite direction in others, it is impossible for the planer operator to "grain" the stock to the cutterhead properly. Graining material to a cutterhead properly, incidentally, simply means sending it through the machine in such manner that the cut will be with (instead of against) grain-fiber direction. Material processed with the grain will not tear.

There are places and cases in woodworking machining, when given pieces are short grained, where an operator is forced to machine a specific side of a board, rather than the opposite side, to favor the grain. In most products, it is common practice to use the best side of a board for the face side. On occasion, however, short-grain considerations make it imperative to use the poorer side.

Cross Grain Stock At The Jointer

In various custom planing mills, as an instance in point, necessity often arises for cutting sizable rabbets in corners of pieces such as door jambs, etc., in small lots. This is often done by setting the

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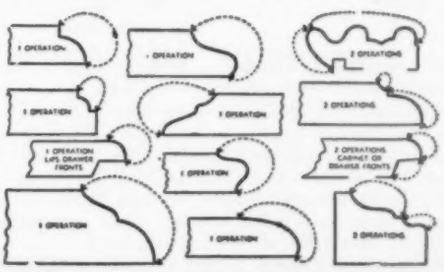

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jointer fence back from the left hand end of the cutterhead, just far enough to obtain desired width of rabbet, and by lowering the infeed table to the point where required rabbet depth will be machined.

In such a case, it is practically always imperative that widthwise direction of grain fibers be correct, or the corners of the jointer knives will seriously tear the external corner of the rabbet. Therefore, in such cases, the jointer operator sometimes has no choice as to which side of the material he will rabbet, in particular respect to a better or a poorer side. He must "stay with the grain."

Another machine where widthwise short-grain direction fully determines which side of material will be used for a face is the single-end tenoner, particularly where coping cuts are being made in tenon shoulders. When a rail is laid down on a single-end tenoner carriage in such manner that very short grain occurs at that edge of

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The NEWTON MODEL E-30 UNIVERSAL EDGE SANDER is unsurpassed for handling small parts on production.

This low-cost Precision-built tool for sanding straight and irregularly shaped edges of wood parts, as well as for many flat surface operations, is well adapted to the sanding and polishing of other materials such as paper, leather, rubber and metals.
The compact NEWTON E-30 with the "double construction" platen is built to give manually high performance at low cost. Platen area is 8½" x 30" on each side, using an 8" x 77" abrasive belt. The work table is extra large—22" x 52", the back half of which tilts for angle sanding. The entire workhead oscillates, and is powered by a 3 H.P. direct-drive totally enclosed motor. Also available in a smaller model having a 6½" x 18" platen. Send today for your descriptive literature and specifications.

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the workpiece where the coping cutters emerge, it is a practical certainty that a triangular chunk of material will be torn away by the knives, making it necessary for the workpiece to be rejected.

Graining For Tenoner Suffices For Molder Also

Whenever this is true of the tenon at one end of a rail, and the cross grain in the workpiece is substantially uniform throughout its area, widthwise, a triangular chunk will be torn from the corner where the coping knives emerge at *both* ends of the stock. By turning the rail over, however, and using the other side as a face side, the opposite edge will be against the tenoner gage in each case, and there will be little danger of tearing.

Incidentally, a considerable number of stiles and rails, preliminarily machined at the mortiser and tenoner, pass on to the sticker or molder for machining moldings on edges of the stock. If they do not go to the molder, they will probably go to the hand feed shaper; graining and potential tearing characteristics are much the same in either case.

When rails have been properly grained for the tenoner so that triangular chunks will not be torn from corners of the tenon shoulders by emerging coping cutters, they are *also* properly grained so they will proceed through the molder or shaper with the grain running in proper direction to avoid tearing.

Four-Side Processing At Molder

From what has been said, it is evident that any piece of lumber that incorporates diagonal grain (as lumber coming from spiral-grained logs always does) inevitably has short grain at two of its corners. When such a board is processed, these corners readily allow triangular pieces to be

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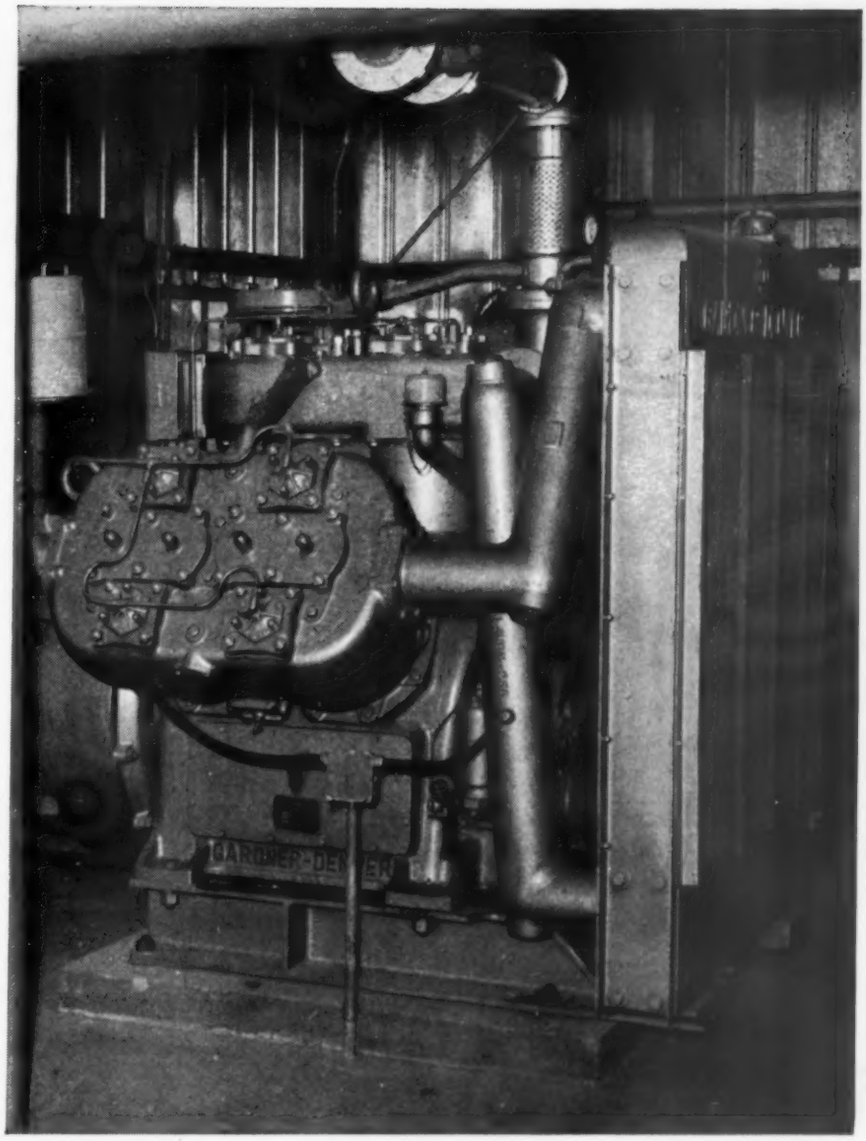

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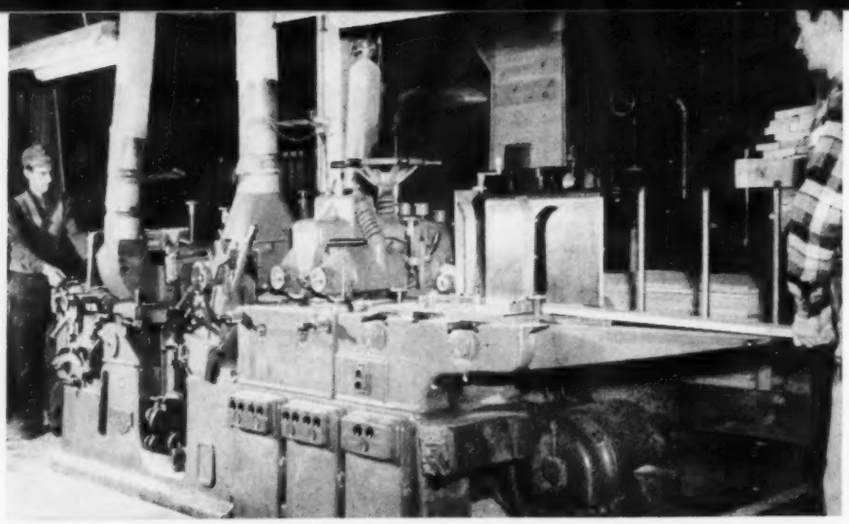

Mattison molder in a furniture plant runs lineal stock. Since both sideheads revolve against the direction of feed, one of them will inevitably cut against the grain when cross-grained material is run. Since both the top and bottom head also revolve against feed direction, if there is thicknesswise short grain, one of these cutterheads will invitably cut against the grain. The operator can "grain" to any selected cutter-head by selecting which side of a piece will be run downward, or which end of a piece will be run through the machine first.

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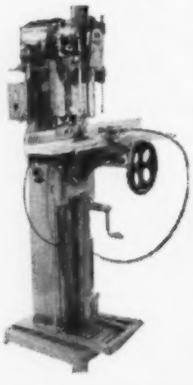
For All Makes of Chain Mortisers and replacement of present parts.

Range of sizes:
Width 3/16 to 1-5/8
Length 3/4 to 6-1/4
Depth 2 to 6"

Flat Bottom 1/4 to 1/2"
Specials made promptly



MORTISERS

Chain and Hollow Chisel Types
In low price bench models, and popular millwork floor models, and automatic heavy duty models for lowest production costs. Available 1, 2, 5 hp.

TENONERS

Bench Model illustrated Makes tenon, cope and cutoff complete in stock 3" x 10".

Heavier floor model with top and bottom copes and small double end available.

Send for Catalog 602—No Obligation.

U.S. CUTTING CHAIN MFG. CO.
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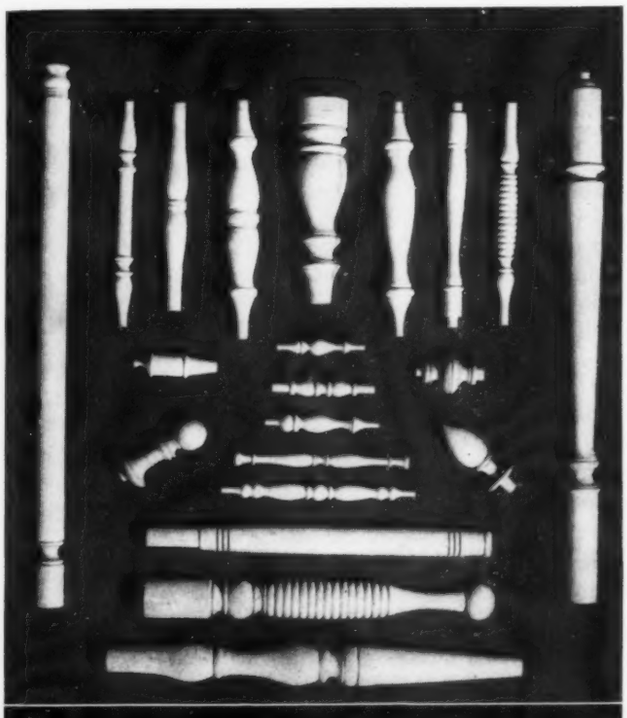

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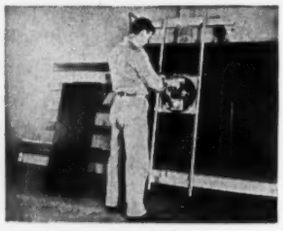
KINGFIELD, MAINE
Established 1885



CROSS CUTS

Both cross cuts and rip cuts may be made without removing panel from machine. Vertical and horizontal scales for selection cuts. A one man operation!

Cross Cut Or Rip Cut Panels Of Wood, Plastic, Aluminum, Plastic Laminates, Hardboard,
and other materials quickly, accurately with the

Bennett PANEL 2 WAY SAW
TRADE MARK

WRITE FOR PRICES AND LITERATURE
RICHARD C. BENNETT MFG. CO.
BOX 332 LACEYVILLE, PENNA.

RIP CUTS

In Use Coast-to-Coast by

- RETAIL LUMBER YARDS
- CABINET AND WOODWORKING SHOPS
- SASH AND DOOR MILLS
- BUILDING CONTRACTORS
- CRATING AND SHIPPING DEPTS.

chipped from them, unless care is taken to avoid it. Continually, therefore, such pieces must be processed "with" the grain as far as possible. Actually, they should preferably be avoided for use in stock which must have both edges jointed in a single pass through a machine, as at the molder or sticker. Under these conditions, such a piece will necessarily have one of its two edges machined against the grain.

Short-grain stock should also be avoided for making workpieces which are small in cross section. Slender stock processed from cross-grain material is notably weak. Nevertheless, it is seldom practical to *completely* avoid short grain.

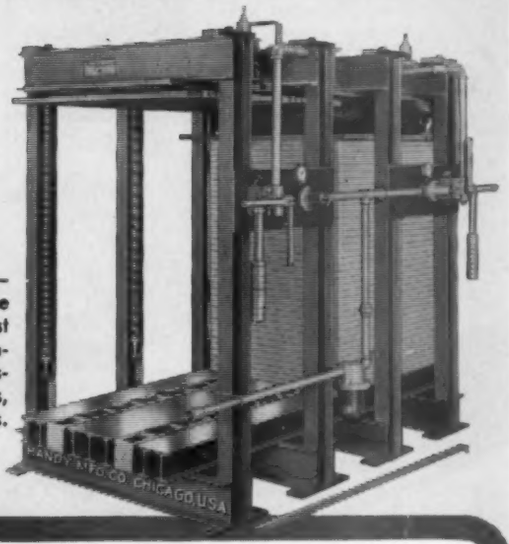
Inevitably, therefore, at a molder, where all four sides of material are machined in a single pass, and where all four cutterheads machine against the feed, one edge will be machined against the grain on any piece which is cross-grained widthwise. Also, end side will be machined against the grain (in greater or lesser degree) where there is crossing of the grain fiber thicknesswise. Consequently, experienced molder operators simply do the best they can. Softwoods do not present much of a problem in this respect. Most tearing from short grain occurs on hardwoods, and some of these are far more refractory than others.

Graining Four-Side Stock To Specific Cutterheads

Generally, it is a simple matter to determine which side and which edge of given stock is most important in the finished product. The usual method is to grain material to the outside head, and (in modern practice, where moldings and similar stock are machined face down) grain material to the bottom head thicknesswise. If tearing persists on the other side and/or the other edge, to an extent which cannot be tolerated, feed of the machine may be slowed somewhat, or some other means can be practiced, such as slight back beveling of cutters, or working out a method by means of which a shearing cut may be employed. □

HANDY Laminaire Presses

Better— Basically new



much more press for the money

Full power 125 psi

Safe, powerful and wholly new—standard Laminaire presses give 100 to 472 tons pressure at lowest cost. Exclusive 6" stroke air-chamber gives smooth, uniform pressure without expensive hydraulics, fire hoses, cylinders or motors. There is no maintenance.

handy

for Laminating, Veneering, Panels, Doors

Panel-to-Frame—standard sizes from 2½' x 4' to 5' x 10' and 2' x 18'. *And there is almost no size limit.* Available with multiple platens, adjustable daylight, and with heated platens. Get the whole, wonderful story now.

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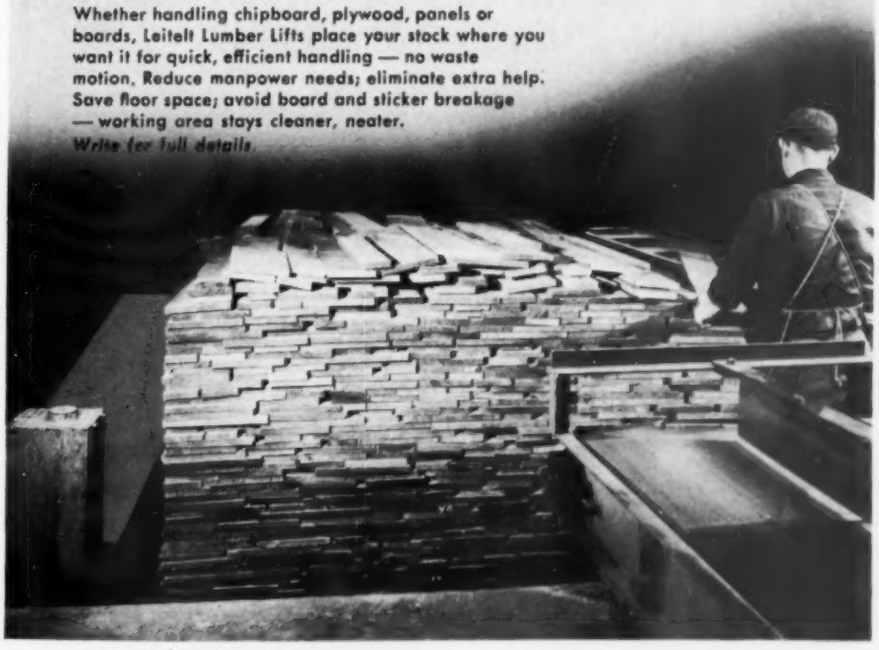
Push-Button control keeps your stock always at working level with **LEITELT LUMBER LIFT**

Whether handling chipboard, plywood, panels or boards, Leitelt Lumber Lifts place your stock where you want it for quick, efficient handling — no waste motion. Reduce manpower needs; eliminate extra help. Save floor space; avoid board and sticker breakage — working area stays cleaner, neater.

Write for full details



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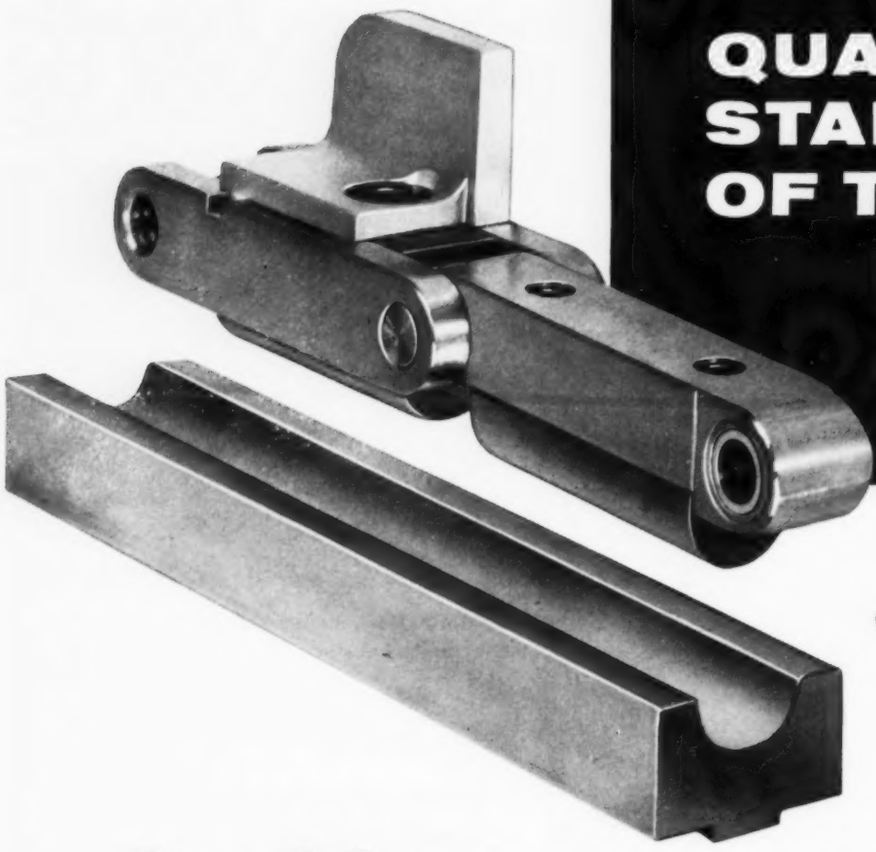


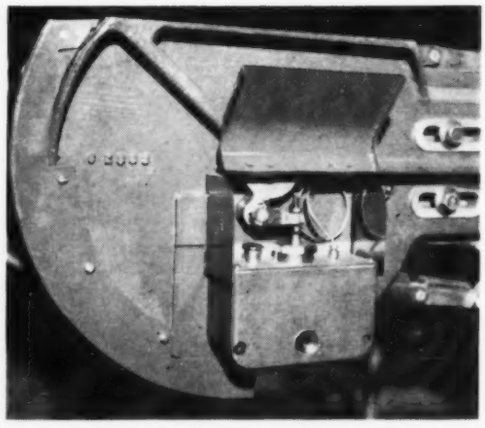
QUALITY STANDARD OF THE WOODWORKING INDUSTRY

only on JENKINS
TENONERS
TRIM SAWS
SLAT BEDS

Jenkins oilomatic feed chains

The Jenkins Oilomatic chain story is sweet and simple. They just go on – year after year – giving accurate, trouble-free service. Here are good reasons why –

- Half round bearings under *every link* give 10-50% more bearing surface than any other chain . . . *eliminate* sidewise movement, even under heavy cope, relish or scarf cuts.
- Moly-impregnated plastic laminate bearings run in matching bearing-bronze track . . . no metal-to-metal contact, will not seize or gall.
- Driving *and* driven links precision ground to .0005" from *solid steel blocks* – no straps in this chain.
- Mating sprocket and drive link radii are induction hardened for long wear.



Jenkins Automatic Oiler

Automatic pump on idler sprocket meters oil to chain track – pays off in precise lubrication to reduce wear without staining stock.

Modern Jenkins equipment can help you cut production costs. Write or call today.

JENKINS DEALERS: **EAST** – John Forbes, Montvale, N J • H C Whitlock Corp, NYC, N Y • Dimension Mill Eqmnt Co, Deansboro, N Y • H W Krehnbrink, Baltimore, Md • **MIDWEST** – Holtson Mach Co, Dayton, Ohio • Tom Clancy, Detroit, Mich • Green Mach Co, Chicago, Ill • Evan Kroll, Peru, Ind • **SOUTH** – Garrison Mach Co, Statesville, N C • Palmer Mach Co, Jacksonville, Fla • Jack Flanders, Little Rock, Ark • Tri-State Mach Co, Dallas, Tex • **WEST** – Cascade Saw & Mach Co, Chehalis, Wash • Hall Mach Co, San Jose, Cal • Jenness Mach Co, Los Angeles, Cal • **CANADA** – Upton Bradeen & James Ltd, Toronto, Ont • Cascade Saw & Tool Ltd, New Westminster, B C.

ENGINEERED AND BUILT BY KOHLER-JOA KJ **CORP., SHEBOYGAN FALLS, WISCONSIN**

A roundup of day to day in-plant problems and how they were handled by management men. Each incident is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to Hitchcock's WOOD WORKING Digest.

Can a worker refuse to do a job unless the company provides extra safety devices?

What Happened

Ben Garlan worked on the same kind of machine for about 4 years. During that period the company had surrounded the machine with as many safety precautions as it thought necessary. As an added measure the company installed a special "safety bar."

A few months ago a bigger machine was installed and the "safety bar" was eliminated on the grounds that it was not necessary. Garlan went to his foreman and demanded that the safety bar be put back. The supervisor and the safety engineer did not ignore this. They checked with the manufacturer, they looked over the job and machine again and they also queried other companies using the same equipment. All agreed that a safety bar would not add to the safety of the machine. When Garlan was told of this he refused to man the machine and walked off the job. He was given a 3-day layoff. He protested with the following arguments:

1. No man has to work on a job which he feels is unsafe.
2. No machine is perfect. I have a right to demand extra precautions.

The company's claim:

1. We made a thorough investigation and found that the bar was not necessary.
2. We have found no records of any accidents having been caused by the fact that there was no safety bar.
3. Management has the authority to determine safety standards. If Garlan thinks the job is unsafe, let him ask for a transfer—not just walk off the job in a huff.

Was The Company: RIGHT ☐ WRONG ☐

What Arbitrator Francis W. Flannagan Ruled

"There is no machine which is 100% safe. If the employer were required to furnish an employee with a machine guaranteed not to cause injury, then the wheels of industry would cease to turn.

"The fact that there had not been a single crushing injury from these machines since the installation of the other safety devices; the fact that the machine was not equipped with a safety bar by the manufacturer and that the machine was used throughout industry without such safety equipment; the fact that this employee had operated this machine without the safety bar for a number of years; the fact that the employee was not on incentive and was told by management to take his time would indicate that, under all circumstances, the machine was reasonably safe without the safety bar. The grievant was not justified in leaving his machine. The disciplinary layoff was justified."

Is a 3-day suspension too severe for an employee who regularly leaves his job five minutes before the lunch period?

We Specialize in . . .

- streamline white oak
- american walnut
- cherry

Veneers and Lumber

AMOS-THOMPSON CORP.

Edinburg, Indiana

What Happened

The company had just signed a contract for new business, but the price was pretty tight. If any money was to be made it meant that efficiency must improve. One of the problems which plagued management was the tendency of employees to knock off and go to the rest rooms 5 or 10 minutes before the lunch period. This continued in spite of the fact that there was a rule which read:

> *"A specific lunch period is assigned to you. It is the responsibility of each employee not to leave his work area before the lunch period begins and also to be at his work area when the lunch period ends."*

To enforce this rule, the company asked the supervisors to talk to the employees and get them to obey. Talk proved of little avail. Warning notices were then given, and John Billings was one of the employees who was reprimanded. When John was caught violating the rule again and again he was given a 3-day layoff.

"That's a whopping penalty," John protested. "You can't make a rule to stop an employee from going to the washroom. This ain't Russia."

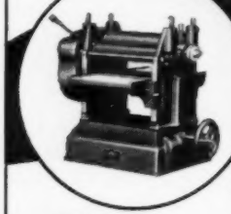
The company was surprised at John's anger. It said that it had no regulations prohibiting employees from going to the rest rooms. But when a worker made it a practice (as John did) to quit five minutes before the lunch hour EVERY DAY, he was loafing, and not answering a need.

Was The Company: RIGHT ☐ WRONG ☐

PARKS 12", 20" and 24" PLANERS

The PARKS No. 20

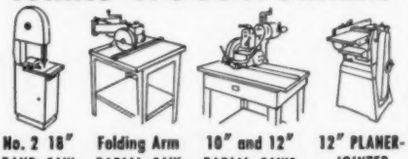
A modernly-designed, low-priced, high speed 20" x 6" thickness planer that meets the surfacing needs of every type of woodworking shop. Also available in 24" model.



Other **PARKS WOODWORKERS**

12" Planer

A compact, heavy-duty 12" x 4" planer that offers mill planer precision at low price.



No. 2 18" BAND SAW | Folding Arm RADIAL SAW | 10" and 12" RADIAL SAWS | 12" PLANER-JOINTER

Write for descriptive literature

The **PARKS** WOODWORKING MACHINE COMPANY

Manufacturers of Quality Woodworking Machines Since 1887

DEPT. 20, 1546 KNOWLTON STREET, CINCINNATI 23, OHIO

What Arbitrator Walter F. Eigenbroad ruled:

"The facts as presented, and the exhibits to substantiate some of the facts, clearly prove that the company insisted on obedience to its rule that no employee leave his work area before the sounding of the whistle designating the lunch period. The evidence further showed that the company allowed its employees to go to the rest rooms as necessary; and that the number of visits and the time of each visit to the rest rooms by the employees was not regulated by the company. Therefore the company's action against John Billings in giving him the disciplinary layoff was not unreasonable."

Do you have to pay an employee if he is not given his share of overtime?

What Happened

Because of an oversight, Jack Calle was skipped on an overtime assignment. The company had a policy which provided that overtime would be "distributed equitably." Calle went to his foreman. "Bill," he said. "It was my turn to work overtime last night. You skipped me and I lost 3½ hours pay."

"I'm sorry, Jack," the foreman replied. "I slipped up. I'll make it up to you. First overtime we get in this department will be yours. Okay?"

"No, it's not okay. I want to get paid for the overtime I didn't work. I'm entitled to it."

The issue went to arbitration and the company claimed that it didn't have to pay. Its only obligation

ROGERS

KNIFE GRINDERS

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SIZES: 32" to 190"
MOTORS: 5 H.P. to 15 H.P. Heavy Duty
WHEELS: 14" Dia. to 20" Dia. Cylinder Or Segmental Type
DRIVES: Mechanical or Hydraulic
COMPLETELY AUTOMATIC.
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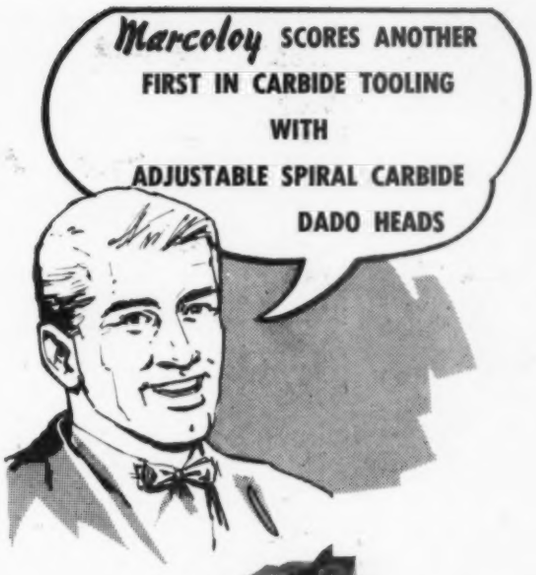

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Carbide Knives with Alternate "Spiral"

VARIABLE WIDTH OF DADOES Obtained Automatically By Turning 1 Nut Only

"TRU-HELIX" SPIRAL CARBIDE HEAD With Removable Knives, Free Cutting, No Tear-outs.

"HELI-BIT" MULTIPLE CARBIDE CUTTING EDGES Set On Spiral. Ideal For Surfacing Or Machining Cross & End Grains. Bits Replaceable Economically.

"UNIVERSAL" COPE Carbide Pattern Knives With Combination Grooving Or Rabbeting. Not Possible With Standard Cope Discs.

"UNIVERSAL" (ALL PURPOSE) Cutterhead With Carbide Pattern Knives Up To 1½" Depth Of Cut. Again, Straight Or Pattern Carbide Knives May Be Used In This Head.

THE MARCOLOY CARBIDE SYSTEM

Marcoloy Carbide Grades Are Developed And Processed In Our Plant Especially For Wood Machining. Our Carbide Tools Are Engineered To Cut Costs. Write Us For Recommendations.

MARCOLOY CARBIDES

MARCOLOY, INC.
SPRINGDALE, CONN.

PRECISION-MADE TO YOUR SPECIFICATIONS

HARDWOOD FURNITURE PARTS

and MOLDINGS

From our large inventories of Appalachian-grown hardwoods, we can supply promptly Hardwood Parts in five species—Ash, Maple, Oak, Poplar and Walnut.

With our modern, expanded facilities, we can glue and laminate, mold, tenon, shape, bore and rout.

Our mill is manned by experienced craftsmen who produce precision parts to your exact specifications—for dressers, chests, beds, night stands, etc.

Remember! We specialize in Oak drawer sides.

Build finest quality into your furniture with Williams-Brownell *Precision Wood Parts.*

Let us quote on your requirements. Send specifications to: W. D. Soderquist, P. O. Box 1091, Asheville, N. C.

WILLIAMS-BROWNELL Inc.
ASHEVILLE, NORTH CAROLINA

ESTABLISHED 1905

was giving Calle a chance to make up the loss by working. "Overtime pay is for working. It can't be used to penalize an employer for an honest mistake."

Was The Company: RIGHT ☐ WRONG ☐

What A Board Of Arbitration ruled:

"Affording an employee an opportunity to make up improperly lost hours at a later date is not an adequate remedy. He is entitled to work those hours at the time they are available, not at a later time more convenient to the employer. Furthermore, there always remains the possibility of termination of an employee between the time he is improperly denied available hours and the time when the employer decides to make additional hours available to him. The worker should be granted pay for the overtime he lost."

Tool up with woodworkers'

KITCHEN CABINET DOOR CUTTERS

Cupboard Door Cutters High Speed & Carbide

Made of High Speed Steel and Carbide tipped, also Vigorite Processed for long wear. ½" to 1¼" holes with three teeth.

New style, bull nosed, carbide-tipped, for plywood. Small radius hides the glue lines.

WOODWORKERS' TOOL WORKS
224 S. Jefferson St., Chicago 6, Illinois

NEW HANCHETT ELECTRIC Jockey GRINDER

MODEL E54 — FOR INSERTED TOOTH SAWS

SHARPENS SAW TEETH RIGHT ON THE MACHINE — PRODUCTION GOES UP SAW MAINTENANCE COSTS GO DOWN

Powerful ¼ H.P. motor with 4½" diameter wheel. Grinds teeth accurately and uniformly. For maximum cutting efficiency!

ALSO MODEL E55 FOR EDGER SAWS

HANCHETT MANUFACTURING CO.
MAIN OFFICE BIG RAPIDS, MICH.
WEST COAST PORTLAND 1, OREGON

Available Literature

Northeast Bulletin

A new 8-page, 2 color Bulletin No. 1059 features precision engineered sawmill equipment. A first edition for Northeast Ohio Machine Builders . . . it describes automatic screw block carriages, hydraulic shotgun feeds, clutch feeds, resaws, bandmills, edgers, circular and bandsawmill auxiliary equipment.

Bulletin No. 1059 breaks down each piece of equipment to its various components and discusses each in detail. Diagrams and specifications give the reader the whole picture of each machine, such as feed speeds, operating pressures, horsepower, motor speeds and other important data.

The back page is devoted to a description of Northeast, a new name in the field, but with years of experience behind it. An architect's rendering depicts the new, modern general office and engineering building that will soon be the headquarters for all Northeast operations.

For a copy of Bulletin No. 1059, write Sales Manager, Northeast Ohio Machine Builders, Inc., P. O. Box 367, Columbiana, Ohio.

Use postpaid card. Circle No. 1

Lumber Seasoning Leaflet

Understanding and applying the principles of proper wood seasoning can do much to help increase profits of sawmill operators and lumbermen, states a new leaflet just issued by the Cooperative Extension Service at the University of Massachusetts. The publication, "Seasoning Lumber for Profit," points out that mistaken ideas regarding seasoning can be costly to the operator. It then goes on to explain how wood dries, how defects occur, and how to control them.

Air seasoning, piling of the lumber and other successfully-used techniques are also described in the illustrated leaflet.

Prepared by Dr. Harold B. Gatslick, a member of the department of forestry and a specialist on lumber seasoning, the leaflet points out that better use of lumber through increased quality in handling and manufacturing will help assure greater returns to woodland owners and other handlers.

Single free copies of Publication No. 347, "Seasoning Lumber for Profit," are available by writing to the Mailing Room, University of Massachusetts, Amherst, Mass.

Use postpaid card. Circle No. 2

Fir Plywood Catalog Announced for 1960

A new, quick-reference catalog has been announced for 1960 by the Douglas

NEW! DUO-FAST Staple Nailer

DUO-FAST Model S-762

Beats hand nailing 5 to 1

Operates at low air pressure

New DUO-FAST Staple Nailer is successfully replacing hand nailing on many jobs including securing glue blocks . . . locking wood joints . . . staple nailing frame assemblies.

Rugged and dependable, the new S-762 weighs only 5½ lbs. . . . operates at pressures as low as 60 psi . . . drives 16 gauge DUO-FAST Staples ⅞" to 1½" long.

Fast, easy Trigger and Touch-Trip operation . . . air return piston . . . built in safety features. Tool cannot be fired accidentally.

Find out how the S-762 will save time in your plant. Write for complete information today.

Over 50 DUO-FAST Sales and Service Offices in principal cities.

Fast, easy one hand operation . . . pinpoint accuracy . . . no splitting.

FASTENER CORPORATION, 3752-54 River Road, Franklin Park, Illinois

DUO-FAST Staplers Tackers Staples

Everything you need for tacking, stapling and nailing.

Fir Plywood Association, along with the first two publications dealing with the technical properties of western softwood plywood sheathing, a new product introduced late in 1959.

The 16-page catalog, indexed for A.I.A. filing, contains up to date basic information on fir plywood standard grades and specialty products for architects, engineers, builders, product design engineers and building code officials.

The booklets on western softwood plywood give details on the recommended uses of this product, which has slightly different properties than Douglas fir in structural applications.

Sample copies of the catalog and new booklets are available without cost from Douglas Fir Plywood Association, Tacoma 2, Washington.

Use postpaid card. Circle No. 3

New Greenlee Brochure

Greenlee Tool Co., Rockford, Illinois, a division of Greenlee Bros. & Co., is offering a new brochure which illustrates and describes many of their tools for woodworking machines. A number of the tools shown can be used in portable, power boring equipment and are suitable for bridge, ship and heavy timber construction.

The brochure features both new and old Greenlee tools such as mortising tools, countersinking tools, routing tools and boring tools. The description includes carbide, high-speed steel, spur, ship-auger, solid-center, extension-lip, relishing, dowel and others. In all, more than 60 different tools are described.

This new brochure can be had free of charge by requesting Bulletin No. M159-A from Greenlee Tool Co., 2463 Herbert Avenue, Rockford, Illinois.

Use postpaid card. Circle No. 4

Teaching, Learning Better In One-Story Wood Schools

The importance of atmosphere to education's tripart role in youth development is emphasized in a new booklet, "Environment For Learning," published by the National Lumber Manufacturers Association.

The booklet's approach, based on a statement by an internationally recognized psychiatrist, first points out that the school structure itself—inside and out—has become more vital to the effectiveness of modern educational programs.

Then it discusses the physical and psychological factors which provide an environment conducive to teaching and learning. Among these factors are attractiveness, safety, versatility, flexibility and economy. The booklet then shows how and why modern wood construction puts more of these essential elements into school buildings, for fewer community dollars, than do other types of construction.

The booklet's comprehensive, thought-provoking message is directed to school officials, planners and designers, and to members of school boards, parent-teacher associations, civic organizations and others interested in and influencing school construction.

Single copies are available, without charge, from National Lumber Manufacturers Association, 1319—18th Street, N.W., Washington 6, D.C.

Use postpaid card. Circle No. 5

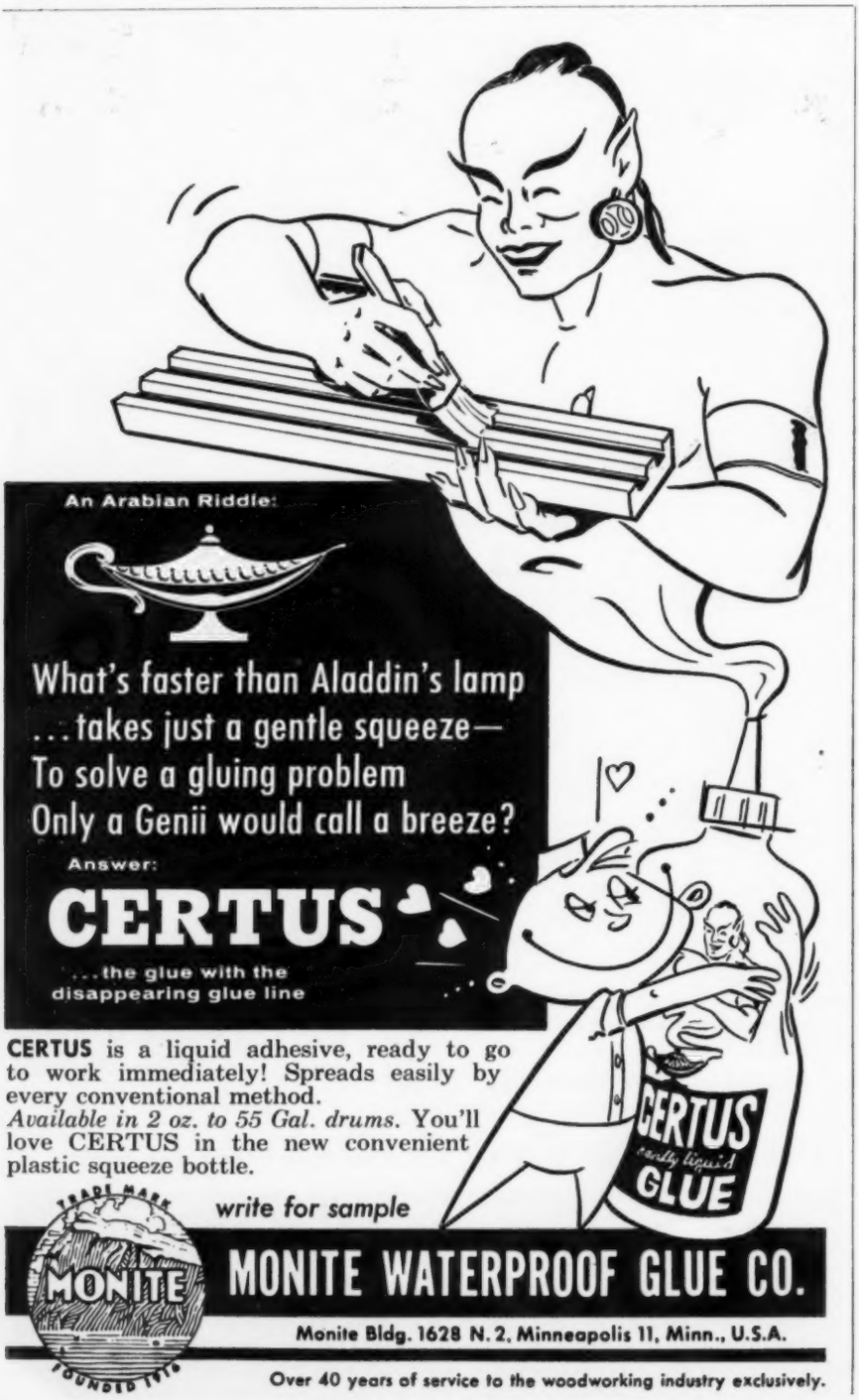
AWI Offers New Wood Window Brochure

A new brochure covering wood window details and specifications has been published by the Architectural Woodwork Institute. The wood window brochure is the 12th in a continuing series which will eventually cover all aspects of the use of millwork in residential and commercial building.

The brochure is designed primarily for architects, their draftsmen and specification writers. All material is in looseleaf form for easy removal and use.

Two pages of traceable detail drawings are presented on double hung windows and four on window wall openings.

Specification suggestions cover the species of wood adaptable for window use, as well as sash, nails, glazing, caulking, finishing, hardware, weatherstripping and workmanship. Also included are recommendations for the preservative treatment of wood and



CERTUS is a liquid adhesive, ready to go to work immediately! Spreads easily by every conventional method. *Available in 2 oz. to 55 Gal. drums.* You'll love CERTUS in the new convenient plastic squeeze bottle.

write for sample

MONITE WATERPROOF GLUE CO.

Monite Bldg. 1628 N. 2, Minneapolis 11, Minn., U.S.A.

Over 40 years of service to the woodworking industry exclusively.

specifications for natural, clear, stained or painted finishes. Additional information is included for awning and hopper type windows.

Copies of the brochure are available from Architectural Woodwork Institute, 332 S. Michigan Avenue, Chicago 4, Ill.

Use postpaid card. Circle No. 6

Hinge Catalog

A complete data catalog which lists over 1900 standard and semi-standard continuous hinges is now available. Profusely illustrated with detailed dimensions, the catalog covers special continuous hinges which have been developed for unusual applications.

Write to the Rex Hinge Co., 140 Coit Ave., East Cleveland 12, Ohio for a copy.

Use postpaid card. Circle No. 7

New Reports From U.S. Forest Products Lab

Two new reports relating to sandwich construction, and design are among the seven new or revised reports recently issued by the U. S. Forest Products Laboratory here.

"Structural Sandwich Design Criteria," Report 2161, presents basic design philosophy for structural sandwich construction under various types of loading. Report 2165, "Long-Term Case Study of Sandwich Panel Construction in FPL Experimental Unit," describes the 12-year exposure and service data that was compiled on sandwich panel construction in an experimental house unit at the Forest Products Laboratory.

"Creep of Small Wood Beams Under Constant Bending Load," Report 2150, is an account of a series of experiments conducted at the Forest Products Laboratory to determine the behavior of small, clear, simply supported Douglas-fir beams in controlled atmospheres under constant dead loads of predetermined size that were applied until failure of the beam occurred.

"The Woods of Liberia," Report 2159, is a 157-page illustrated publication containing pertinent data on approximately one-third of the trees known to grow in Liberia.

Machines suitable for the production of chips to meet various specifications of new products utilizing wood chips are described in Report 2160, "Wood-Chipping Equipment and Materials Handling."

"Preservatives for Wood Pallets," Report 2166, points out various preservatives and methods of application that may be used advantageously for lengthening the service life of wood pallets.

Information on an 8-foot tunnel-furnace test used to investigate surface flammability for building materials has been incorporated along with other pertinent data in a recently revised publication entitled, "Fire-Test Methods Used in Research at the Forest Products Laboratory," Report 1443.

In addition to the reports, the Laboratory has issued revisions of "Partial List of Publications for Furniture Manufacturers, Woodworkers, and Teachers of Wood Shop Practice," Report 1775 and "List of Dry-Kiln Companies and Engineers and Consultants in the United States," Report 1031.

Single copies of these reports are available free upon request from the Director, Forest Products Laboratory, Madison 5, Wisconsin.

New Gruendler Bulletin

The recently published 8-page Bulletin No. H-850 by the Gruendler Crusher and Pulverizer Company features their line of new industrial hammermills. Included in the bulletin are photo illustrations of recent installations of the hammermills. Included are photo views, diagrams and detailed descriptions of the machine crushing elements, components, parts and accessories, and photo views and descriptions of the Gruendler special purpose reduction machinery for the more difficult reduction and processing work.

Bulletin No. H-850 is available from Gruendler Crusher & Pulverizer Company, 2915 North Market Street, St. Louis 6, Mo.

Use postpaid card. Circle No. 8

No sag...and less cost

.....WITH *Wabash*

HARDWOOD SLIDES

TO PUT more sales appeal into your tables at lower cost and with fewer production headaches, use Wabash Hardwood Slides.

Carefully built, these Hardwood Slides are as good as the best ... yet often are priced lower. They are quiet and smooth in operation. Tongues are shaped to put a crown in the slide when it is extended ... to prevent sag!

FREE ENGINEERING SERVICE

Planning new tables? Send construction specifications to us. We'll plan extensions for greatest economy at no cost to you.

And for your non-dividing base tables, use Wabash Equalizer Slides for greatest sales appeal.

Walter of Wabash

B. WALTER & CO., Inc., WABASH, INDIANA

SLIDES • HARDWARE • DROP LEAF SUPPORTS

Compressor Bulletin

A completely new 24-page bulletin describing the WN-114 stationary compressor has just been released by Joy Manufacturing Company. The new booklet includes specifications on three basic models of the semi-radially constructed units ranging from 1385 cfm to 1948 cfm at 125 psi.

Vital information on "package" design, components, intercooling, lubrication, motor mountings and accessories are fully illustrated and explained.

For a copy, write to Joy Manufacturing Company, Henry W. Oliver Building, Pittsburgh 22, Pennsylvania.

Use postpaid card. Circle No. 9

Planer-Matchers

A new 12-page bulletin No. 6220 offered by Yates-American Machine Company, Beloit, Wisconsin, illustrates and describes the new design features incorporated in the firm's complete new line of heavy duty planer-matchers, including the A-20, A-20-12, A-62. Details on the new Model A-20-12, which provides faster feed rates up to 400 f.p.m., are also included along with descriptions and illustrations of exclusive features, accessory equipment, and tools.

This line of planer-matchers has capacities of 15", 20" and 24" widths with feed rates from 75 to 600 f.p.m., and accommodates 6' stock without butting and thicknesses to 8".

For additional information, write the manufacturer.

Use postpaid card. Circle No. 10

WCLA Publishes "Where To Buy" Directory

The 1960 edition of West Coast Lumbermen's Association's "Where to Buy Directory" is now available to lumber buyers and users throughout the nation.

The 52-page book lists approximately 250 sawmills in the Douglas fir region. Each mill's listing includes the address, key personnel, capacity, facilities and species produced. Forty different manufactured items are listed across the top of each page. Using the cross reference method, one can immediately determine which items are manufactured by a given mill. The listed items run the gamut from boards and dimension stock to gutter, doors and corn cribbing. A few of the other items are railway and car material, boat lumber, crossarm stock, lath, log cabin siding and knotty panel stock.

The "Where to Buy Directory" in its present form was first published in 1938. Each year, thousands of copies are distributed throughout the United States and Canada.

This "Buyer's Bible" for West Coast woods also lists: timber-fabricating companies, wood pipe manufacturers, and wood treating companies. A handy list of commonly-used lumber abbreviations is found on the inside back cover.

A copy is available from West Coast Lumbermen's Association, 1410 S. W. Morrison Street, Portland 5, Oregon.

Use postpaid card. Circle No. 11

Flakecore Applications

The latest applications for Graco Flakecore, a quality wood core, are described in a new folder published by Gray Products Co., Inc., Richmond, Va. Besides applications this folder gives descriptions, illustrations and general product information.

Use postpaid card. Circle No. 12

Boice-Crane Catalog

A new Boice-Crane 44-page power tool catalog No. 60 includes the Golden Anniversary models being introduced during the 50th year of that manufacturer.

Described and illustrated are the lines of band saws, contour saws, jig saws, saw tables, saw-jointers, jointers, belt sanders, spindle sanders, shapers, shaper cutters, lathes, planers, drill presses, band filers, grinders and spinning tools.

Among the new items included are the Challenger 10" tilt arbor saw, a heavy duty, gear drive drill press, an improved hand stroke belt sander, a new model metal cutting band saw and band filer, table extensions for a 10-inch tilt arbor saw, and a combined chip breaker-deflector on the 12" x 4" planer.

Boice-Crane Co., 931 W. Central Ave., Toledo 6, Ohio.

Use postpaid card. Circle No. 13

Engine Maintenance

A new 24-page booklet on diesel engine maintenance has been prepared by Cummins Engine Company, Inc.

The booklet, "Ten Maintenance Steps," tells power users how to in-

DON'T LET EXTRA PROFITS GO UP IN SMOKE!

CONVERT YOUR WOOD SCRAP INTO PROFITABLE FUEL and/or CHIPBOARD MATERIAL with an American WOOD HOG

Open view of American Wood Hog showing chisel pointed hammers.

If a continuous open fire in your back lot is the only way you can dispose of hard-to-handle, storage-consuming wood scrap—this message is for you! An American Wood Hog is an economical way to convert this waste into profitable fuel for your boiler system. American-reduced chips are uniform, assure more complete combustion. They can be fed by blower to the boiler, and feed hoppers can be custom-designed for your installation. American Wood Hogs are also extensively used for primary reduction for wood flour, or making chips for particle board.

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

WRITE for your copy of WOOD HOG BULLETIN H-55

1510 MACKLIND AVE. • ST. LOUIS 10, MO.

crease equipment availability, reduce operating costs and obtain better engine performance.

Chapters covered in the booklet include:

1. Keep Dirt Out of the Engine.
2. Maintain A Lubricating Film On All Bearing Surfaces.
3. Regulate the Engine's Fuel.
4. Control Operating Temperatures.
5. Guard Against Corrosion.
6. Let the Engine Breathe.
7. Prevent Overspeeding.
8. Know Your Engine's Condition.
9. Correct Troubles While They Are Simple.
10. Schedule and Control Your Maintenance.

A free copy of the booklet may be obtained by writing the Sales Services Department, Cummins Engine Company, Inc., Columbus, Indiana.

Use postpaid card. Circle No. 14

Starrett New Tools Catalog

Forty-eight page catalog illustrates and describes 88 new Starrett tools including new satin chrome steel tapes; Vernier height gages and calipers; many new micrometer calipers, inside micrometers, micrometer depth gages and micrometer heads; satin chrome combination sets, protractors, dividers and trammels; Dial-Master indicators and Dial-Bore gages; mechanics' tool chests; and many others.

Copies available on request to The L. S. Starrett Company, Athol, Massachusetts.

Use postpaid card. Circle No. 15

Brochure on Grad Studies

A new cooperative program between the University of Wisconsin and the U. S. Forest Products Laboratory is described in a brochure entitled, "Opportunities for Graduate Studies in Forest Products." The brochure is aimed at students who are looking for an institution with a unique combination of high academic standards and outstanding research facilities at which to do their work.

Copies of the brochure describing the program may be obtained from Prof. W. K. Neill, Chairman, Supervisory Committee on Forest Products, Room 3218 Chemical Engineering Bldg., University of Wisconsin, Madison 6, Wisconsin.

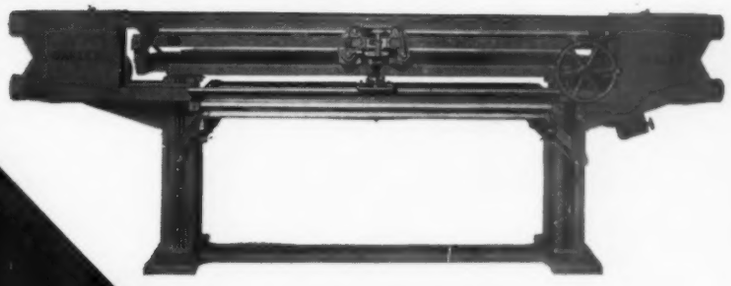
Use postpaid card. Circle No. 16

Tags Increase Sales

According to the Better Packaging Advisory Council, informative tags increase furniture sales up to 50%. The poll revealed that 59% of the firms questioned recorded volume boosts up to 10%. At the other end of the scale, 12% reported a phenomenal 50% spurt.

BUILT FOR HIGH PRODUCTION

OAKLEY MODEL D SINGLE-BELT SANDER



- HIGH SPEED
- SEMI-AUTOMATIC
- DUST-PROOF
- REVERSIBLE
- CAPACITY TO 10'8"
- FRICTION-FREE STROKER

NEW EFFICIENCY PEAKS PROFITS

Revolutionary stroker unit is double-lighted . . . sands assembled case goods easily. Light-alloy stroker "floats" on rigid steel bar track. Saves 25 to 40% on paper costs by changing belt direction.

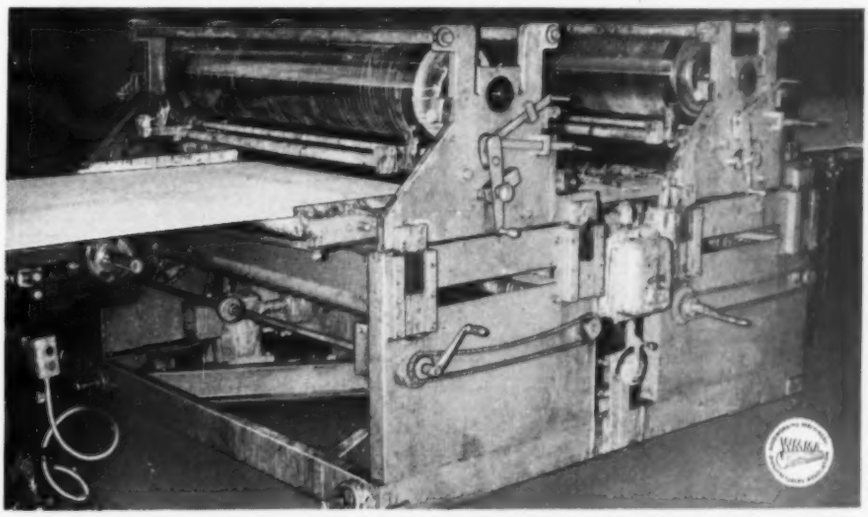
SANDER & POLISHER COMBINED IN MODEL D-1

All the features of Model D are incorporated in this Oakley Sander-Polisher. Removes tape, polishes and eliminates raised grain without sponging or glue sizing. Stock is ready for finishing room with single handling! *WRITE FOR FULL DETAILS TODAY*

Dept. 10

The Oakley Co.
SINCE 1934

BRISTOL TENNESSEE



Uni-Grainer consistently gives perfect two-color match at Regal Products, Inc., Chicago

This leading producer of top grade printed plywood paneling is pleased with the performance of their Uni-Grainer infinite-register two-color graining machine. The Uni-Grainer is quickly set up for perfect registration. Printing assembly easily raised or lowered for thickness adjustment — no change in conveyor pass line height. Cylinder designed for fast removal through split housings and roller bearings. All excess ink is reclaimed. It's a profit-maker! Write for literature.

900 North Detroit Street

THE UNION TOOL CORPORATION
WARSAW, INDIANA

UNION-WALLACE-INDIANA
A MANUFACTURING GROUP DEVOTED TO PRODUCING THE HIGHEST QUALITY WOODWORKING MACHINES

Thicker Flakecore From Gray

Gray Products Company, Inc., Richmond, Va., announces the production of Graco Flakecore in new "thicker thicknesses."

Flakecore is now available in thicknesses up to 1-3/16".

Graco offers stock panels up to 5' x 10' size. Solid strength is assured by 100% homogeneous flakes, having a modulus of rupture of 3800 p.s.i. and a density of 38 lbs. per cubic foot for less weight.

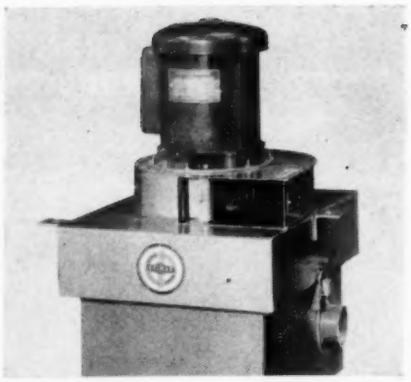
The lighter Graco Flakecore was developed by Gray Products Company after extensive inquiry into the needs and specifications of core users. It is now in wide use for plastic underlayment, restaurant tables, wall partitions, pianos, store fixtures, vanities and as a core for wood veneer. Graco Flakecore is manufactured in accordance with NAPF specifications.

Manufacturer: Gray Products Company, Inc., 4 East Main St., Richmond, Virginia.

Use postpaid card. Circle No. 17

Small Dust Collector

A compact, low-cost industrial dust collector, suitable for use in any light dust-producing operation, is being produced by Torit Manufacturing Co. The new model 301 stands only 21½" high



and occupies a space 12" x 14". It can be located on or under workbenches. The dust-collecting medium is a fire-resistant, throw-a-way glass filter. Performance ratings under standard test conditions are: 200 c.f.m.; velocity, 4100; static pressure 1.7" w.g.; inlet, 3". The 301 is equipped with a 1/3 h.p. motor.

Manufacturer: Torit Manufacturing Co., 1133 Rankin St., St. Paul, Minn.

Use postpaid card. Circle No. 18

Electronic Gluing Equipment With Two Guns

The Mils Engineering Co. is introducing a new two-gun electronic gluer. The Weldotron Model 42 W makes it possible to double production in the same amount of floor space. The two guns can operate independently from one generator.

Each gun will be tuned separately so that two different operations can be performed at the same time. No special instruction is needed by the operator.

Manufacturer: Mils Engineering Co., 780 Frelinghusen Ave., Newark 12, N.J.

Use postpaid card. Circle No. 19

Keeping up-to-date?

Check other items about equipment and free literature on pages 112, and 99, respectively.

NEW driQuik Infra-Red Oven breaks thru the Drying Barrier at Kroehler Louisville Plant

Now! For the first time

a radiant electric infra-red oven that dries finishes on case goods furniture in mixed sizes and shapes in 1/10th the time required in hot air convective ovens!

Here are just a few of the many advantages of drying with a driQuik ceramic type infra-red oven:

1. *Lower* initial cost.
2. *Lower* unit drying cost.
3. *Reduced* conveyor cost.
4. *Less* floor space required.

SMALL PLANTS AS WELL AS LARGE

can benefit by using the same type oven. Let us show you. DriQuik will bring field test equipment to your plant WITHOUT OBLIGATION to show you what can be done with *your* product and *your* finishes.

MAIL THIS COUPON TODAY
Dry Clime Lamp Corp., Greensburg, Ind.

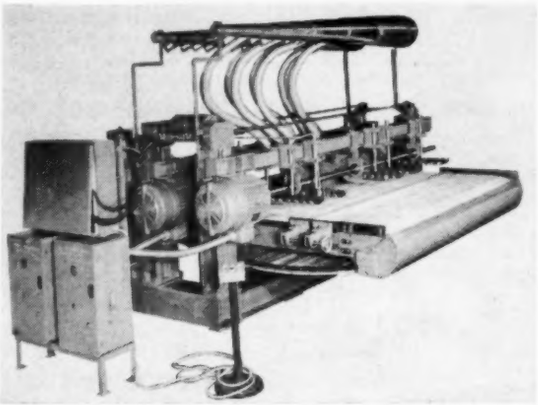
☐ Send your engineer to my plant on or about (date)_____ for a field test demonstration.
☐ Send me more information about driQuik infra-red drying ovens.

Name_____ Title_____
Company_____
Address_____
City_____ State_____

driQuik Industrial Div.
DRY CLIME LAMP CORP.
GREENSBURG, INDIANA

Double Arbor Slat Bed Allows Dual Setups

Dual overhead dado arbors for multiple splitting or grooving; electric gearmotor lift on each arbor for quick, easy vertical adjustment; individually spring-loaded rubber-wheel holddowns; and portable pedestal control panel are main features of a new slat bed multiple cutup saw engineered and built by Jenkins Machinery Division of Kohler-Joa Corp.



Dual arbors allow two setups at one time. To change arbors, gearmotors quickly lift one out, lower other into work. Combination grooving and splitting using both arbors eliminates stocking two diameter saws. Portable pedestal panel puts control buttons at operator's fingertips regardless of load size or placement.

Handwheel adjustable fences on each side of bed permit double loading of smaller stock—again using either or both dado arbors. Bed feed speeds are infinitely variable and machine can be fed either behind or in front of dogs to suit job requirements. Rugged design allows up to 50 hp. totally-enclosed fan-cooled motors per arbor.

Manufacturer: Jenkins Machinery Division, Kohler-Joa Corp., Sheboygan Falls., Wisconsin.

Use postpaid card. Circle No. 40

Lignum Vitae Applications

Here is an assortment of self-lubricating, non-contaminating Lignum-Vitae components, used in almost every industry in one form or another, where low friction, silent operation is important.

These Lignum-Vitae parts operate well in water, liquids, many acids and chemicals, and because Lignum-Vitae is non-contaminating, can function in edible foods and liquids.

Inasmuch as Lignum-Vitae is able to resist pressures up to 14850 lbs. p.s.i. on the end grain, components made of it never creep or flatten in service, since there is no deformation under load.

Parts can be made to customer specifications in any quantity, from one unit to millions.

Manufacturer: Lignum-Vitae Products Corporation, 97-P Boyd Ave., Jersey City (4), New Jersey.

Use postpaid card. Circle No. 41

DURO

your BEST BET for Sanders!

✓ Large belt surface can be used vertically or horizontally.
✓ Large work table interchangeable with belt or disc.
✓ Extra capacity dual dust collector, with fireproof bag, removes dust from both disc and belt.
✓ Ideal for wood, metal and plastic.

This new, streamlined Duro disc and belt sander (6" x 48" belt, 10" disc) has become the "most wanted" unit in woodworking, plastic and metal plants throughout the country. On a feature for feature comparison test—with other nationally advertised sanders—it has proved to be the No. 1 value in the industry. In addition to its rugged, vibration-free cast iron construction, it has many "hidden" quality features that make it such an outstanding "best bet". These include: a special pre-loading belt tensioning device for quickly installing belts without re-tensioning and re-tracking; "swing-away" forward end guard opens easily for access to end of drum for sanding curved objects; precision, sealed ball bearings insure smoother, longer lasting operation, plus others.

Send for FREE circulars

giving prices and specifications on this and the other sanders in the Duro line. See, too, the comparison chart showing why Duro is the best buy. You can have a power tool catalog for the asking.

DURO Metal Products Co.
2673 N. Kildare Avenue · Chicago 39, Ill.

New Oil And Resin Polymer For Production Prefinishing Of Panels

The Watco-Dennis Corporation, Santa Monica, California has announced availability of a new oil and resin polymerizing finish for production prefinishing of wood panels. In a single application the new finish achieves an oil or "Danish" type finish without laborious hand rubbing or multi-coat finishing.

The new WATCO prefinish is a super-penetrating liquid compound whose performance is based on polymerization within the wood itself. (Polymerization is a process of change from a liquid into a resilient solid.) Easily adapted to fast production or custom prefinishing, the WATCO finish eliminates the necessity for sealers or multi-coat steps in its application. It seals, densifies and finishes the wood in one operation.

The new WATCO product is a supplement to other polymerizing finishes created by the firm and used for many years in Britain and South Africa. It is non-flammable and non-toxic and is immediately available in production quantities.

Manufacturer: Watco-Dennis Corporation, 1640-20th St., Santa Monica, California.

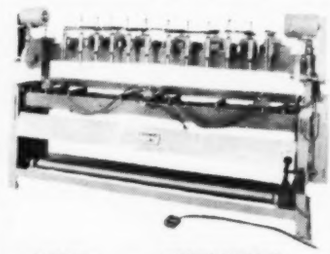
Use postpaid card. Circle No. 21

Is Design Your Business?

A new book, "Twentieth Century Design," has been published by the Museum of Modern Art, New York City. Primary interest to HWWD readers is the fact that this book expresses part of the museum's ambition to promote good design. The museum's experts will help and advise manufacturers of furniture and other artifacts.

The book states that there have been five major design eras in our 20th Century—yet we have barely rounded the half-way mark. If anything, future progress will be even faster.

"Since the end of World War II electronics has altered our conception of how things need to be shaped in order to work, and of how they may be related to each other . . . Perhaps the most striking characteristic of the new machine aesthetic is its dematerialization of finite shapes into diagrammatic relationships. . . . The practical effect of these ideas on the design of commonplace useful objects is not yet apparent, but we may reasonably expect that they will in time produce a new attitude toward form." (page 132, "Twentieth Century Design.")



Willard

MULTIPLE-SPINDLE

DRILLING or BORING MACHINES

Vertical • Double-End • Dowel Horizontal and Special Models

• FAST • VERSATILE • MODERATELY-PRICED

Write Today For Complete Information

THE KRAMER MACHINE CO.

LAKE CITY (ERIE COUNTY), PA.

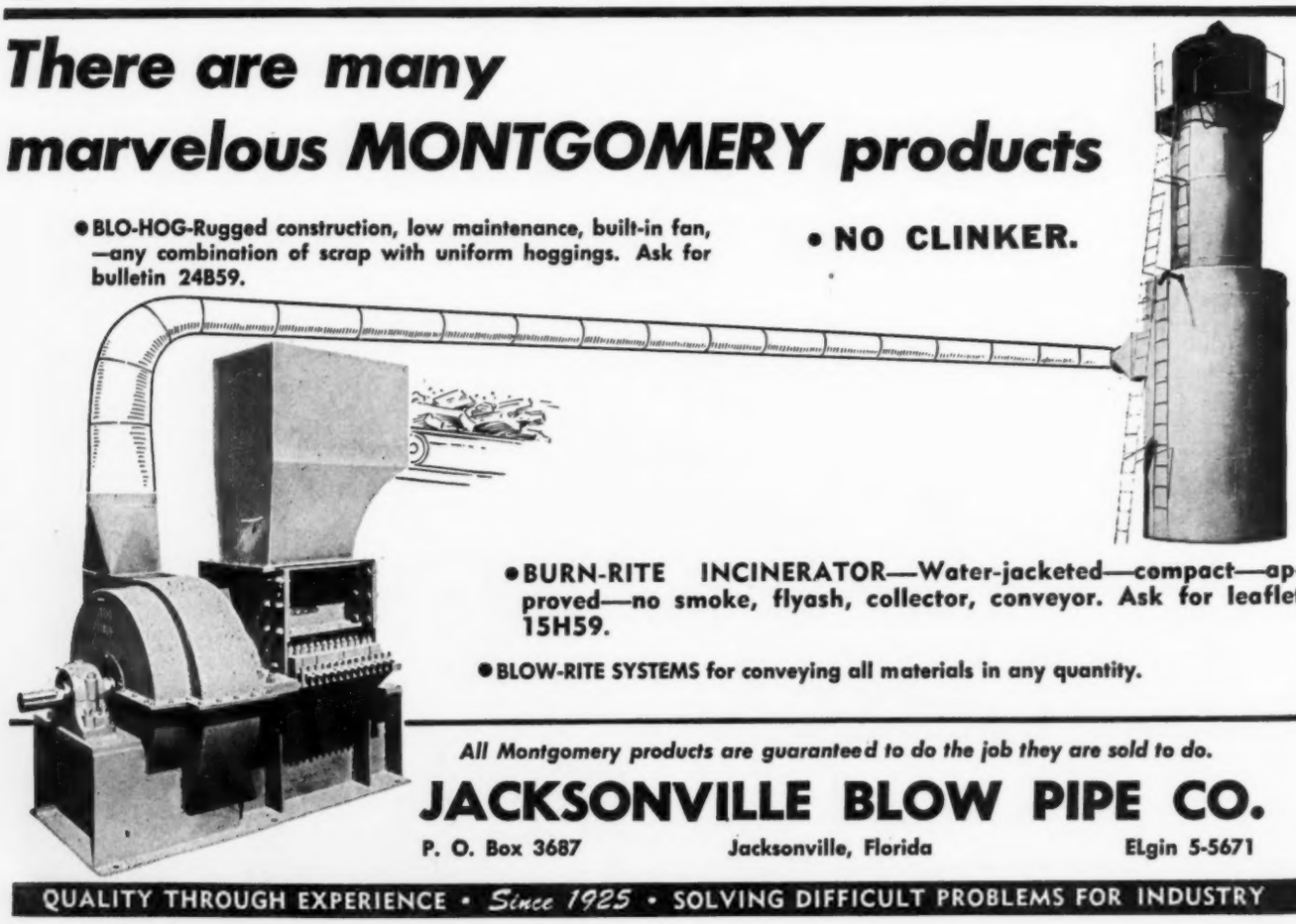
Also Manufacturers of—

THE WILLARD LINE OF AUTOMATIC SHAPERS

There are many marvelous MONTGOMERY products

• BLO-HOG-Rugged construction, low maintenance, built-in fan, —any combination of scrap with uniform hoggings. Ask for bulletin 24B59.

• NO CLINKER.



• BURN-RITE INCINERATOR—Water-jacketed—compact—approved—no smoke, flyash, collector, conveyor. Ask for leaflet 15H59.

• BLOW-RITE SYSTEMS for conveying all materials in any quantity.

All Montgomery products are guaranteed to do the job they are sold to do.

JACKSONVILLE BLOW PIPE CO.

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QUALITY THROUGH EXPERIENCE • *Since 1925* • SOLVING DIFFICULT PROBLEMS FOR INDUSTRY

Industry Notes

Kiln Drying Short Course

K. R. Peterson, wood technologist at the University of Illinois, announces that the Department of Forestry, University of Illinois College of Agriculture, will act as host for the 1960 Kiln-Drying Short Course which will be conducted March 21-25. This five-day course in kiln drying and seasoning of wood is unique in that it combines the resources of a number of educational institutions and industrial firms. Major emphasis is placed on the practical aspects of seasoning.

Anyone engaged in drying lumber or in handling and manufacturing wood products can benefit from this course. Participants are especially urged to bring specific problems for consideration during special discussion periods.

For information about the short course, write to Kiln-Drying Short Course, Department of Forestry, 219 Mumford Hall, Urbana, Illinois.

Fifth World Forestry Congress

There seems to be some misunderstanding among United States and Canadian foresters, conservationists and forest industrialists as to who can attend the Fifth World Forestry Congress. Here is the official policy on attendance:

No individual invitation is needed to attend the Fifth World Forestry Congress. The Congress is open to any private person or technician interested in forestry, forest conservation, forest recreation and the forest industries. Simply apply for membership to: Dr. I. T. Haig, Executive Secretary, Fifth World Forestry Congress, Department of State, Washington 25, D. C.

Salute To Inventor

The man who invented the first power screwdriver, the tool that was the first step to mass production, has reached his 50th milestone with Thor Power Tool Company, portable air and electric tool firm headquartered in Aurora, Ill.

G. H. DuSell

Invention of the power screwdriver is G. H. (Doc) DuSell's banner accomplishment in 50 years of outstanding service to Thor as inventor, salesman, district manager, field engineer, and trainer of scores of Thor salesmen who have achieved success under his guidance. Today DuSell, widely known in the power tool field as "Mr. Thor," continues to help guide Thor tool development and sales as a sales engineer at the company's Aurora headquarters.

Display Firm Engineers Own Laminating Equipment

Freedman Artcraft Engineering Corporation, Charlevoix, Michigan, manufacturers of custom display cabinets, record cabinets, and visual educational displays, recently completed the installation of their own designed and engineered laminating equipment system.

This new unit will apply plastic

laminates to such core stocks as: plywood, lumber, hardboard, particle board, and a wide variety of related materials, such as glass and metal.

The new Freedman laminator will handle nearly any length of material

Here's What

WILLIAM'S "NO-NIFE" HOGS

Can Do For You:

1. Increase The Heating Value Of Your Wood Scrap!

When reduced to chip form by hogging, wood burns more evenly—gets *all* the heat value possible. Unhogged slabs, trimmings, large pieces, restrict air flow, smother fire, result in inefficient combustion.

2. Improve Quality Of Wood Flour And Sawdust!

Processing wood scrap with a Williams Hog, for resale in the form of wood flour or sawdust, assures more uniform grinding and sizing—much lower labor costs—reduced power requirements.

3. Reduce Handling Cost As Much As 75%!

One man firing wood in chips can handle the same tonnage as would require three men if fuel scrap remained in awkward lengths and pieces that necessitate individual handling.

4. Your Operation May Permit Complete Automatic Handling

Williams has made many automatic installations to hog and convey waste wood to stoker or boiler at tremendous savings in handling expense. Other installations to automatically grind, separate and package wood flour and sawdust result in phenomenal reductions in cost.

Williams equipment will actually pay for itself in a few months, then continue to produce extra profits for many years. Investigate now!

Write for Details

WILLIAMS BUILDS A COMPLETE LINE • Hogging, Grinding & Shredding Machines • Vibrating Screens • Conveying Systems • Air & Mechanical Separators • Complete "Packaged" Plants • Cyclone Collectors

WILLIAMS PATENT CRUSHER & PULVERIZER CO. • 808 ST. LOUIS AVE., ST. LOUIS 6, MO.

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

and widths up to 48" and thicknesses up to 4". The variable speed-controlled oven conveyor can operate at any speed from 4 f.p.m. to 36 f.p.m., giving it a maximum daily operating capacity of nearly 15,000 feet. The laminating unit includes complete equipment to handle all types of post forming work, as well as self edging required on either flat or post forming. An added feature of this newly-designed laminating machine operation is its adaptability for applying any type of epoxy finish.

Lumber Grading Course

A 5-day hardwood lumber grading course will be held April 18-22, 1960, at Michigan State University, East Lansing, Michigan. The Department of Forest Products of Michigan State University and The National Hardwood Lumber Association are sponsoring it.

This course is intended for the benefit of people engaged in the production, selling, buying or use of hardwood lumber. It will provide a basic knowledge and understanding of grading rules, and will serve as a refresher for practicing graders. A working knowledge of hardwood grading rules will allow the sawyer, edgerman and trimmerman to obtain more high grade material from a given log; it will prevent misunderstandings between buyer and seller; and will reduce manufacturing costs by better selection of grades for various uses.

Enrollment will be limited to 25 men, and applications will be accepted in the order received. Enrollment may be made by sending $35.00 per man (payable to Michigan State University) to: Hardwood Lumber Grading Course, Continuing Education Service, Michigan State University, East Lansing, Michigan.

Additional information about the course may be obtained from the above address.

Completely new principle produces a stabilized, precision-metered curtain which coats ultra-smoothly at high speeds

How the NEW *GASWAY*
Kinetic-Kurtain Coater
helps you improve finish, save material and increase production

A new precisely metered gravity curtain of material! That's what gives you an ultra smooth coating film deposit at high speeds. Ends material loss . . . produces faster . . . smoother film ... fast color changes ... previous settings exactly duplicated ... only two easy adjustments ... many standard paints and finishes can be applied. Here is the finishing man's dream – fast, efficient, economical coating. Find out about this dramatic new machine today.

- Coats all materials
- Speeds from 50 to 450 FPM
- Applies many different finishes
- Explosion-proof design
- Coats up to 65" widths

25 Years' Experience In The Finishing Field

SEND FOR COMPLETE INFORMATION

Complete booklet gives details, specifications, recommendations. All the information you need to let you decide what Kinetic-Kurtain Coating can do for you. Write today for free booklet.

GASWAY CORPORATION
6463 N. RAVENSWOOD AVE.
CHICAGO 26, ILLINOIS
SHELDRAKE 3-1414

National Plywood Distributors Plans Expanded Program

National Plywood Distributors Association, with headquarters based in Portland, announces a greatly enlarged program of activities to its membership as approved by its recent board meeting.

Joseph O. Epler, Seattle, has been added to the NPDA staff as Assistant Manager. Epler is widely known in Kiwanis International as Immediate Past-Governor, Pacific Northwest District, of which he was executive administrator to that service club's 23 divisions embracing 13,000 members in the region.

A series of spring regional meetings for members is scheduled, according to the announcement:

Eastern Regional, Biltmore Hotel, New York, March 4.

Southern Regional, Dinkler-Tutwiler Hotel, Birmingham, Ala., March 8.

Midwest Regional, Sheraton Towers, Chicago, March 11.

Western Regional, Ambassador Hotel, Los Angeles, March 25.

Also, NPDA's 18th Annual Convention at Sun Valley, Idaho, July 1-5, is timed when an appraisal of the industry's expanding economy can be made at mid-year and the multi-million dollar plywood promotion program for 1960 will be well under way.

NPDA represents the distributing arm of the plywood industry. Its nation-wide membership consists of leading merchant jobbers who have successfully sold the burgeoning volumes of construction and decorative plywoods produced in the Northwest, as well as domestic and the swelling import varieties. Having distributed most of the softwood production, which alone, increased by more than 22% in 1959 to nearly 7¾ billion square feet, this marketing segment accepts with confidence the challenge of 1960 which may see nearly 15% new production to be sold.

Rietz on World Tour

Raymond C. Rietz, a wood seasoning expert at the Forest Products Laboratory, Madison, Wis., has begun a round-the-world trip to gather information that will further develop and strengthen seasoning research at the Laboratory.

Rietz will visit various research institutes and laboratories in the forest products field to obtain information of value to seasoning research programs in the U.S.A. Included will be visits to: Sidney and Melbourne, Australia; Launceston, Tasmania; the Forest Products Research Institute in the Philippine Islands; Tokyo, Japan; Dehra Dun, India; Rome, Italy; Munich, Stuttgart and Reinbeck, Germany. In Germany he will discuss developments there in high frequency heating and temperature drying.

At stops in London and Princes Risborough, England, Rietz will discuss kiln drying schedules of various foreign woods that are becoming of interest to American manufacturers. After leaving England, he will return to the United States, arriving in Madison about April 20.

BRI Conference to Spotlight New Uses of Adhesives

The use of adhesives for drywall construction, for bonding cementitious materials, and in the lamination of structural timber beams will be topics for a 2-day conference during the Building Research Institute's 3-day spring meeting, April 5-7, Statler-Hilton Hotel, New York. Developed under the chairmanship of George J. Schulte of Minnesota Mining & Manufacturing Co., the technical program will bring to the platform some of the nation's top experts in this field to discuss the problems connected with laminated structural timber beams; i.e., development of wood sealers that can be finished after fabrication, improved waterproof adhesives which will reduce production time and cost, accelerated testing methods for laminated bonds, and improved adhesives for scarf joints.

Crossett To Build Shavings Board Plant

Ford, Bacon & Davis, Inc., New York engineering and management consultants, has been selected to design and supervise construction of the $6 million medium density wood shavings board plant of the Crossett Lumber Co. a division of the Crossett Company at Crossett, Ark.

The Crossett facility will be the second of its kind in the country. It will produce 100 tons of medium density board daily by the Behr process from gum wood. The first plant was completed two years ago by Ford, Bacon & Davis for Roddis Plywood Corporation in Arcata, Calif.

Roddis holds exclusive United States rights to the Behr process. The Crossett plant will operate under a license from Roddis.

Donald R. Seip Co. is technical consultant to Crossett on the project.

Danckaert Expands Again

March marks the first anniversary of the American branch of the century-old Danckaert Woodworking Machinery Co., of Belgium, one of the largest woodworking machine makers in the world. In that one year this branch has been forced to expand its quarters for the third time. The new offices and show-rooms are more than five times the size of the original establishment of last March.

The new quarters are located at 891 Howell Mill Road, Atlanta, Georgia. Here, examples of the complete Danckaert line of woodworking equipment are on display, and the stock of replacement parts is kept for immediate shipment.

Roger Criau is in charge of this branch, which covers the entire United States, and works closely with the Danckaert distributors.

Appointments and Promotions

The Abitibi Corporation of Alpena, Mich., has recently appointed **E. J. Schultz** vice-president of sales. Mr. Schultz has been with the company since its incorporation in 1956 and has been responsible for the formation and direction of all the company's sales and marketing activities.

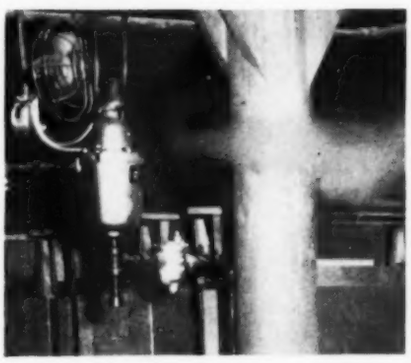
R. Brady

E. J. Schultz

To the Executive Concerned With Improving Profits

How would you like an investment that returns the principal the first year and pays 100% each successive year?

If your plant is in an area where outside temperature in winter falls well below freezing, you can make such an investment.



The investment?

Armstrong Humidification for your plant.

Your production people can tell you what dry air in the plant during the heating season means in terms of stock losses, gluing problems, and excessive repairs. Scores of users have told us that the cost of Armstrong Humidification is *no more than the cost of one season's losses resulting from dry air.*

You can get a more accurate indication of the investment required by asking us to have an Armstrong Representative to make a humidification survey of your plant. Do it, today. We think you'll be pleasantly surprised at what a small investment is necessary to start earning big returns.

ARMSTRONG STEAM HUMIDIFIERS

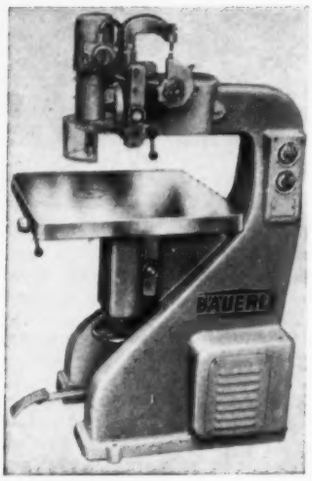
Manufactured and Guaranteed by the Makers of Armstrong Steam Traps

ARMSTRONG MACHINE WORKS

8633 Maple Street • Three Rivers, Michigan

"THE QUALITY LINE"

BAUERLE ROUTER MODEL "OF"



Drive: Direct—2 speed 12,000 rpm & 18,000 rpm. Available with higher speeds.

Head: Vertical movement by foot pedal, accurately scaled with 8 quick changing stops for efficient routing to various depths.

Table: Adjustable and locked in desired position. Helps maintain operator's balance and permits side supports for long or irregular work.

Size: 30" x 27½", larger available.

Head: (together with above) Tiltable to any angle permitting unusual applications.
2 chucks supplied & balancing equipment for eccentric chuck.
Construction of finest metals and workmanship with all parts guaranteed for one year.

2 Speed $1810 F.O.B. New York.
1 speed $1300 F.O.B. New York.

Also on display: Table saws with sliding tables. Band Saws. Shapers.

Representatives for USA

HENRY WIEGAND CORPORATION
122 Bretton Road
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Show-Room

ADEE MACHINERY COMPANY
35 Howard Street
New York City

Visit our show-room or Write for more information and names of representatives in your area.

A new position —manager of power tool sales—was created recently in the sales department of Disston Division, H. K. Porter Co., Inc. **Robert Brady,** formerly district manager of New York and the New England states has been named to this post. **C. Earl Weber,** formerly product manager of hardware has been named sales manager of hardware. He will be Mr. Brady's supervisor.

C. E. Weber

Carlton Smith

A new general sales manager has been appointed for Fan Air Systems, Memphis, Tenn. President **Carlton Smith** recently announced that **William J. Tomford** will fill this important post.

A. E. Richardson, Jr., has been appointed general sales manager of DeWalt Div., American Machine &

A. E. Richardson

W. J. Tomford

Foundry Co. He will succeed **Truman Jones** who was recently elected vice-president in charge of special projects to cordinate all government sales and national accounts.

The Hardwood Plywood Institute has engaged a plant inspector and laboratory assistant. He is **Holly H. Holliday.** He will be covering the entire east coast, as well as some other areas in the north and south. Mr. Holliday will visit the HPI member plants on a regular inspection basis.

Earl F. Bennett has been appointed to the newly created post of manager of Architectural Sales, Koppers Co., Inc. In his new capacity Mr. Bennett will be responsible for technical information to the building and construction industry. In the past, emphasis has been on sales promotion with less concentration on the presentation of technical material.

Harry C. Lingle has been elected vice-president in charge of engineering and production for Signode Steel Strapping Company, Chicago, Ill. **Richard G. Patterson** has been appointed to a newly

TITAN High Speed HANGER BOLT DRIVER

• **TIMED IN SECONDS!**
This tool is used by a majority of plants where hanger bolt driving is done on a high production basis. Can be operated at any speed which is safe for driving the hanger bolt. It is not necessary to stop rotation at any time.

COLLAPSIBLE TYPE TRIP GAGE
Patented. Has such a large adjustment range, made possible by a new all-thread main ring, that most common stud projection heights can be secured with only one gage.

- AUTOMATIC TAKE-UP FOR WEAR ON JAWS
- REVERSING POSITION OF CLUTCH GIVES DOUBLE WEAR AT HALF COST
- AFFORDS ACCURATE PROJECTION HEIGHTS
- USE WITH ANY AIR OR ELECTRIC DRILL OR DRILL PRESS

Write for Free Literature, Today!

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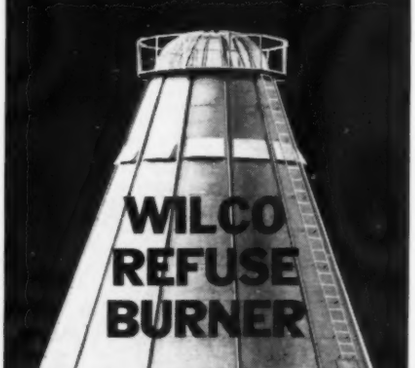
TITAN TOOL CO.
Production Tools
49 Main Street
Fairview (Erie County), Pa.

Proven 400 times



1-Piece Panels Make Erection Easy
Mail Coupon for Data

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Phone WH 8-4555 Box 3722 HW
Memphis, Tenn.
Send details on Wilco Refuse Burner to:
Name_____
Company_____
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H. H. Holliday

H. C. Lingle

created position of forest products manager with the firm. This company has also named **J. H. Elsinger** as district manager for the firm's new sales district which includes Florida and parts of Georgia and South Carolina.

R. G. Patterson

Jack McDonough

Jack McDonough has been named chief engineer at The G. M. Diehl Machine Works, Inc., Wabash, Indiana. McDonough was formerly manager of the Lumber Handling Equipment Division, Moore Dry Kiln Co.

Carl Mullen, vice-president in charge of research and development of the Gates Rubber Company, has been elected chairman of the Technical Committee of the Rubber Manufacturers Association, Industrial Rubber Products Division, at a recent New York meeting.

As chairman of one of the rubber world's most important committees, Mullen will direct the work of an advisory group which reviews and recommends specifications covering industrial rubber products for industry, government and private business.

Several personnel changes have been announced by the Weyerhaeuser Company. **A. O. Karlen,** branch manager at Weyerhaeuser's Coos Bay, Ore., operation will retire March 31. He will be replaced by **Howard E. Hunt,** general superintendent of the Everett, Wash., lumber division. However, Hunt will not take over his duties immediately. In the meantime, **Jack W. Titcomb** will serve as acting branch manager.

Byron M. Oyster of Tacoma, safety engineer for the Weyerhaeuser Company, has retired for reasons of health. **Louis B. Hoelscher,** assistant training administrator will succeed Oyster.

Dave James, director of public relations for Simpson Timber Co., Seattle, Wash., has been named the 1960 chairman of the National Council of American Forest Products Industries.

James A. Wold has been named general manager of the newly acquired Commercial Ink and Lacquer Company operations of the Borden Chemical Co., He was formerly general manager of the company's Consumer Products and Resinite departments. The new Borden ink operation will formally be known as the Ink and Lacquer department of the Borden Chemical Company.

Raffi and Swanson, Inc., announces the retirement of **A. B. McCormack** as technical sales representative, after a career of more than 30 years with the company. He is succeeded by **Richard H. Harrington,** formerly in the company's Research Laboratory.

Sealy Establishes Mobile Homes Division

Contract to manufacture and distribute Sealy bedding products for mobile homes is presented to executives of Comfo-Sleep, Inc., Waukesha, Ind., by E. H. Bergmann, Sealy president. Comfo-Sleep manufactures a full line of bedding, sofa beds and allied products for the mobile homes industry.

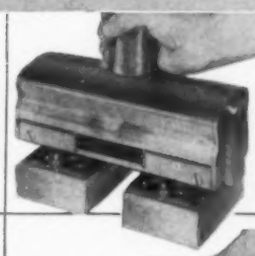
Shown with Bergmann are left to right, John Z. Olcott, assistant to president; Fred Nesbitt, vice president and sales manager; and James B. Kirkwood, president. Awarding of this contract marks the creation of a mobile homes division by Sealy.

Portable air and electric

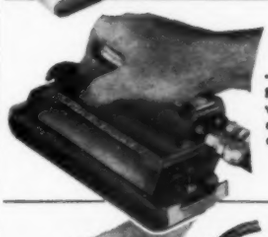
Sanders

for production and maintenance work

Model OS-800 — lighest weight orbital air sander on the market, at only 3 lb., packs the power and speed needed for production jobs.

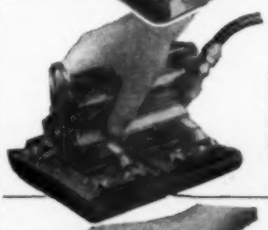


Model 600 — heavy-duty, straight-line air sander for sanding, pumice rubbing, or polishing, 1100 oscillations per minute.



Model OS-700 — single-pad orbital air sander, weighing 5 lb., operates over 6000 cycles per minute.

Model 4000 — straight-line, two-pad air sander with longer, slower stroke, 2100 oscillations per minute, 9 lbs.



Model 1000 — straight-line air sander with big abrasive area, operates at 2500 oscillations per minute, palm lever control, 7½ lb.

Model OE-900 — electric — heavy duty, high torque, constant speed. Not damaged by overload. No belts, gears or brushes.

Model SP-101 — straight-line, single-pad air sander, 3000 oscillations per minute, 5 lbs.

ASK FOR BULLETINS...
Specify models in which you are interested.

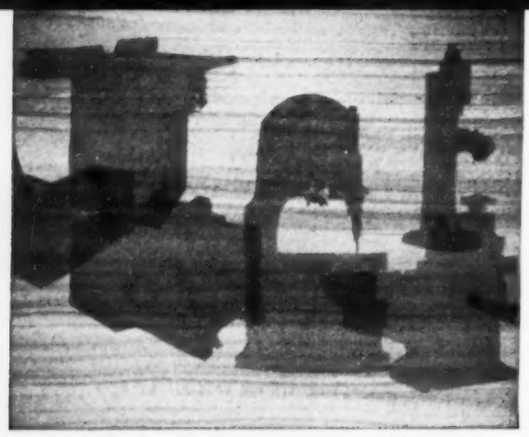
All air sanders suitable for wet or dry sanding; electric sander for dry work only.

SUNDSTRAND

SUNDSTRAND SANDERS

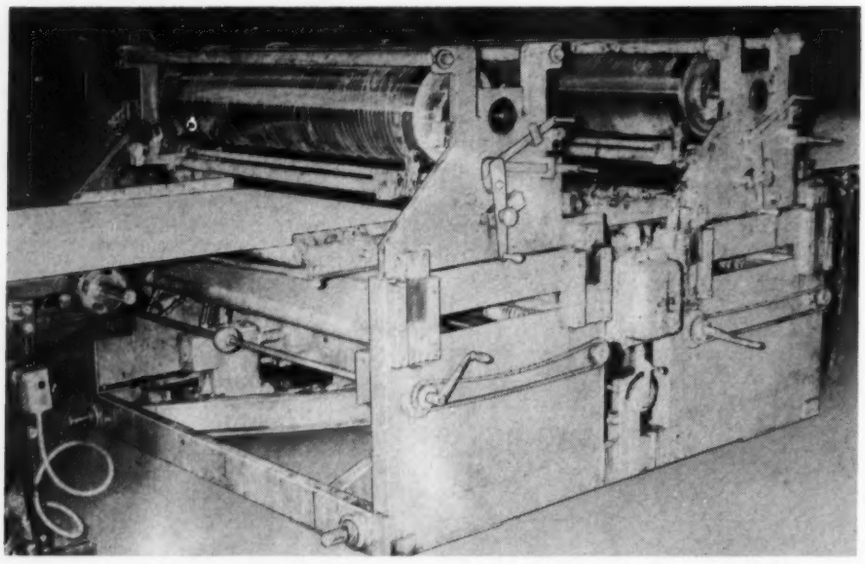
SUNDSTRAND MACHINE TOOL • Belvidere, Illinois

Division of SUNDSTRAND CORPORATION



equipment and supplies

Union Introduces New Graining Machine



A new infinite register two-color graining machine has been introduced by the Union Tool Corporation, Warsaw, Indiana. Known as the "Uni-Grainer," this unit is designed to give true-to-life reproductions of the most beautiful wood grains on sheets, tops, fronts, panels and other products.

Among the many features of the Uni-Grainer are: infinite registration which permits a perfect two-color match; printing assembly easily raised or lowered for thickness adjustment—no change in conveyor pass line height; and cylinder designed for fast removal through split housings and roller bearings. All rolls are mounted in roller bearings and all excess ink is reclaimed. Washer rolls for cleaning the cylinder may be added if desired. Models are available for 36", 48" and 60" width material. Feed speed is variable.

Manufacturer: Union Tool Corp., Warsaw, Ind.

Use postpaid card. Circle No. 22

Picture Frame Production Improved

Two efficient setups provide rapid and accurate kerf cutting at Bassons Picture Frame Company, Brooklyn. One uses a Delta shaper and the other a Delta radial saw positioned upside down and equipped with a pneumatic cylinder power feed.

Bassons cuts kerfs in edges of picture frame pieces to receive kerf nails that join the parts. Kerf nails are fasteners cut from 9/16" wide I-shaped strips.

The Delta shaper (top) was adapted for kerf cutting by the addition of a special shaft which raises the blade to a 5" height above the table. A 3" saw blade is mounted on the shaft. A sliding, adjustable jig for holding the work is mounted on the miter gage bars of the shaper. The angle of the jig is adjusted according to the kerf angle desired. Two work pieces are held on the jig against angle-iron rests position at 45°. Adjustable stop blocks hold them in position. To cut kerfs, the operator simply positions two pieces on the jig and slides it forward. He can cut 350 pieces per hour.

The kerf cutting machine made with the Delta radial saw (lower picture, page 114) is about 30% faster. The saw blade moves instead of the work pieces. The saw is inverted with the shaft protruding above the table. An 8" double-acting pneumatic cylinder is attached to the saw head to feed it forward and retract it. The cutting angle is adjusted by elevating the radial saw head and by two panels of the work table. The work is positioned against holding bars. The one on the operator's left has a clamp stop at the far end to prevent rotation of the blade from throwing the piece outward.

To operate the machine, the operator simply places two pieces in position and

BIRDS EYE VENEER CO.

SINGLE PLY VENEERS · ALL NORTHERN HARDWOODS

ROTARY CUT · · · · · SLICED · · · · · HALF ROUND

BeVeG VENEERS

BIRDS EYE · CURLY & PLAIN HARD MAPLE
NORTHERN BROWN ASH · NORTHERN RED OAK
BIRCH · CORK WHITE PINE · BASSWOOD · ELM

P. O. BOX 317

Escanaba, Mich.

***another** leader chooses Turn•A•Bore door manufacturing machinery!*

"...gives us a definite edge on keen local competition," says ARIZONA SASH DOOR & GLASS COMPANY

Phoenix plant,
Arizona Sash Door & Glass Co.

"Arizona Sash Door & Glass Company was started by a small group of lumbermen, 34 years ago. Since then we've tried to keep abreast of modern building trends. We looked the field over before buying door hanging machinery. We're glad we did — because now we know that Turn•A•Bore Equipment is the only 'set-up' we could have purchased which would give us a definite edge on keen local competition."

THE TURN•A•BORE STORY some important facts *you* should know:

- With Turn•A•Bore shop machinery one semi-skilled operator turns out a complete, precision-built door and jamb unit in *less than fifteen minutes.* With additional operators manufacturing time can be cut to *5-8 minutes per door unit.*
- Turn•A•Bore door units are first choice with builders and contractors. They are interchangeable . . . fit any opening perfectly . . . qualify for all types of home financing . . . save time and money on installation.
- The basic Turn•A•Bore shop costs $6,000 to $9,000 — can be financed for as little as $1,000 down. No "royalty" payments per door are required. You owe nothing beyond the price of the equipment you buy.

write, wire or call collect for complete details.

CHOP SAW | JAMB AND STOP MACHINES | DOOR SIZER | DOOR MACHINE | HARDWARE APPLICATION MACHINE | HYDRAULIC ASSEMBLY TABLE | END TRIM SAW

TURN•A•BORE EQUIPMENT COMPANY

5916 EAST ROSEDALE
FORT WORTH, TEXAS

NEW

filter respirator actually comfortable to wear

More efficient— costs less, too!

We don't say your workers won't know they're wearing our new Resp-R-Aid mask. But it's a fact the edges of this remarkable *urethane foam* mask are so soft and pliable they literally *caress* the natural contours of *any* face, closing all gaps with no discomfort. Yet the mask weighs hardly more than an ounce.

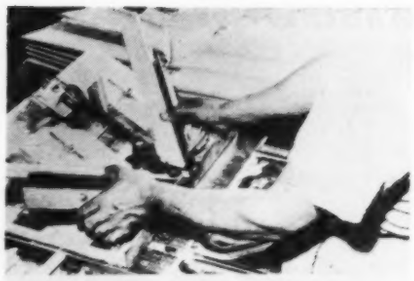
The entire mask is a filter. More than 25 square inches of micro-porous urethane. Up to 8 times the filtering area of most masks. Breathing is easy, natural, *comfortable* because thousands of interconnected cells trap foreign particles, but let air pass freely. Resp-R-Aid lasts longer, too; you wash it out in seconds. And every Resp-R-Aid is factory-sanitized with bacteria-static quaternary agents.

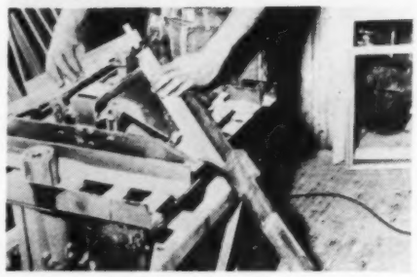
Yet for all its comfort and efficient protection against mists, sprays and nuisance dusts, Resp-R-Aid costs only $1.95. Replacement filters available. Watchemoket Optical Company, Inc., 232 West Exchange St., Providence 3, Rhode Island. Throughout Canada: Levitt-Safety Limited.

WATCHEMOKET

Resp-R-Aid®

U.S. Patents Applied For





depresses the foot pedal which actuates the pneumatic cylinder. The blade moves forward for the cuts and then retracts. A buffer valve limits return movement. Output is 450 pieces per hour.

Manufacturer: Delta Power Tool Div., 400 N. Lexington Ave., Pittsburgh, Pa.
Use postpaid card. Circle No. 23

Atlas Bench Saw

Here is a new Atlas 10" heavy-duty tilting arbor saw. Some of the important features include:

CURVED PLYWOOD?

Made to specification

High-Frequency bonding on low cost forms

Tell us your problem — we'll solve it to your specifications. We manufacture unusual plywood shapes for applications ranging from church pews to water skis . . . table legs to torpedo cradles. Our high-frequency presses mass-produce curved parts fast and at lower cost than other methods, and with greater stability. We have over 200 stock dies available for stock shapes. Write, wire or phone RI-2-2474 for quotations and complete engineering service.

PLY-CURVES INC.

1615 Monroe Avenue, N.W., Grand Rapids 5, Michigan

A REAL SHARPENER BUY

FOR CROSS CUT AND RIP SAWS

Men who know prefer the Wardwell Y-18 EVERYTIME

- **SHARPENS**
- **JOINTS**
- **BEVELS**

Automatically in ONE Operation

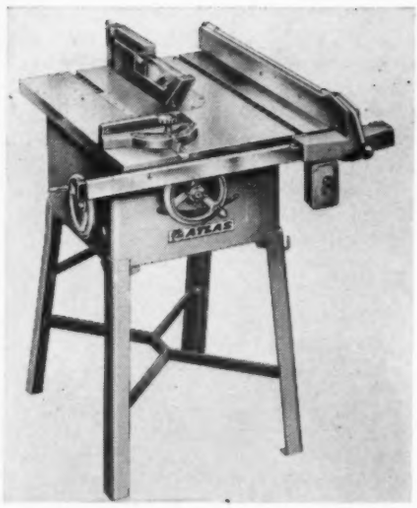
- **Makes Perfect Cutting Circle**
- **Increases Saw Life**
- **Increases Cutting Production**

AC 38 Circular Saw Setter Saws 5 to 38" dias. set at 200 teeth per min.

Write today for Prices and Details On the Best Saw Sharpener Made.

WARDWELL Manufacturing Co.
3806 Ridge Road
Cleveland 9, Ohio

Makers of Largest Line of Saw and Tool Sharpening Machines



An efficient double locking lift-off fence, sand-cast aluminum for rigidity and lasting accuracy; big mitre gauge with 8¾" x 2" face; mitre gauge keyed to table for greater cut-off capacity—25"; precision ground solid steel arbor; lubricated-for-life ball bearings; big, cast-iron handwheels; self-cleaning blade control screws.

Condensed specifications are: 20" x 27½" table, 59½" x 27½" with two grill-type extensions; 9" right of blade to fence, 28¾" with one extension; 12½" table surface ahead of blade; 3⅛" depth of cut with blade at 90°, 2⅛" with blade at 45°; dual V-belt drive, continuous duty, totally enclosed motor.
Manufacturer: Atlas Press Company, 20-118 N. Pitcher Street, Kalamazoo, Michigan.

Use postpaid card. Circle No. 24

New Band Saw Grinders

The new series "A" band saw grinding machines recently placed on the market by Hanchett Manufacturing Co., are now available with attachments for full Universal saw sharpening applications. The new attachments consist of a continuously variable lift adjusting mechanism and a continuously variable feed adjusting mechanism.

These adjustments are controlled by means of handwheels and the adjustments may be made with the machines in operation. With these attachments, the series "A" machines will sharpen any depth or any spacing of regular band saw teeth without changing cams.

These variable attachments can now be furnished with the A-220—12" capacity machine, A-230—14" capacity machine and A-240—16" capacity machine.
Manufacturer: Hanchett Manufacturing Co., Big Rapids, Mich.

Use postpaid card. Circle No. 25

Automatic Truss Cut Machine

An automatic truss cut machine, designed to fabricate all wood components for roof truss construction, has been announced by Turn-A-Bore Equipment Company of Fort Worth, Texas. The Turn-A-Bore machine eliminates time spent in measuring and marking lumber. It reduces total fabrication time—including setup, loading and unloading the machine, and actual cutting to four minutes, or less.

The new machine can be adapted to meet the requirements of any type of truss design, coupling and assembly methods now in use. It performs all angle cutting, notching, and boring (where necessary) for top and bottom chords, tension and compression webs.

Automatic settings for changes in cut to correspond with changes in roof pitch and span can be dialed by the operator. Components cut for the same pitch and span settings are finished to such close tolerances that they are interchange-

BADGER MULTIPLE PATTERN BITS
ARE THE ANSWER
FOR
MASS PRODUCTION

Many products lend themselves to multiple production: dowels, rods, shade rollers, swab sticks, motor wedges, pencils — to name a few. The moulder thus becomes a real mass production tool when equipped with BADGER milled **and precision ground** multiple-patterned bits. There is little to limit what can be mass-produced. Swab sticks 1/16" diameter and 36 ply are not uncommon and shade rollers as large as 1¼" diameter are being made in multiple. Intricate shapes such as motor wedges and pencils, from 2 to 20 ply, have been precision produced. There are no practical limits on the number of ply other than the capacity of your **machine and the size of the piece** being produced. You can get the entire "tooling package" from Badger — the multiple-ply bits, the cutterheads, and the precision ground hold-down shoe (if needed) — with undivided responsibility for precision performance! The development of your pattern, no matter how intricate, is calculated accurately by Badger engineers, drawn 50 times larger than actual, and checked against actual production cuttings with an optical comparator. You are thus assured of the utmost accuracy and virtually the entire elimination of the line joint between the upper and lower cuts. If your production adapts itself to mass output, why not turn the problem over to specialists in precision tooling for prompt suggestions?

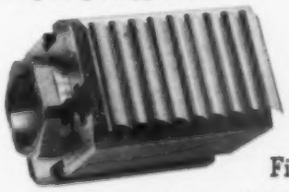
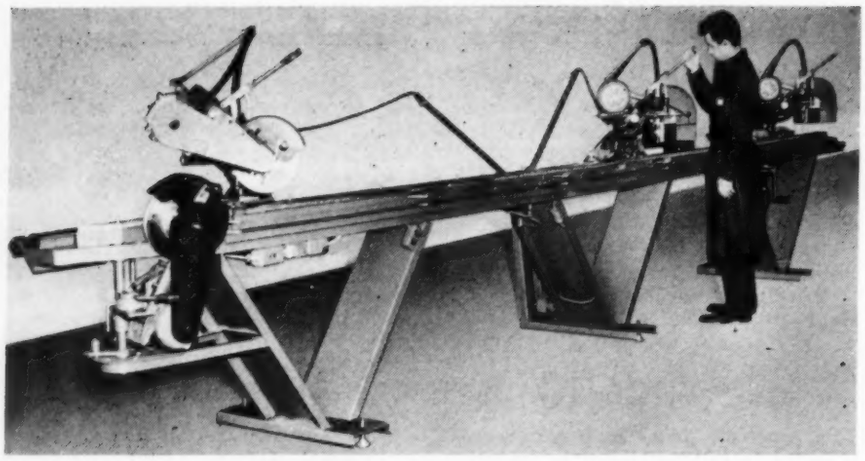


Fig. 252
Badger Clamp T Slot Head with Multiple Dowel Bits

© 1960W K.W.

BADGER
SEND FOR Free CLAMP-T-SLOT CUTTERHEADS BULLETIN #200

Engineers to the Woodworking Industry
NAME_____
FIRM_____
ADDRESS_____
CITY_____ STATE_____
WISCONSIN KNIFE WORKS
BELOIT, WISCONSIN



able. The machine requires only one operator, and is said to be so simple that a semi-skilled worker can be trained to run it with a few hours instruction.

"The automatic truss cut machine has four distinct advantages for truss packagers," according to Paul Stevens, president of Turn-A-Bore. "It lowers the time required for lumber fabrication from half an hour or more, to minutes. It insures precision finishing of every truss member, making assembly easier and lowering labor costs substantially. It virtually eliminates scrap caused by operator error or miscalculation. And it permits complete flexibility in the manufacture of trusses of any combination of span and pitch, without continual reference to detailed specifications and the use of pattern boards or templates."

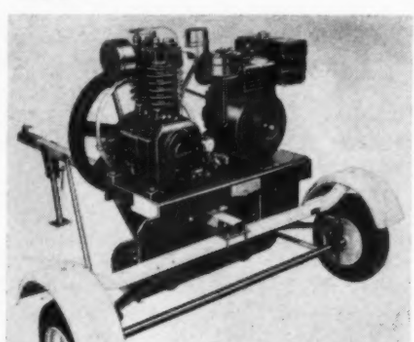
Manufacturer: Turn-A-Bore Equipment Company, P.O. Box 7072, Fort Worth, Texas.

Use postpaid card. Circle No. 26

Double Action Pump For Spray Painting

A new, double-action pump which simply screws into the bung of standard-sized closed drums of finishing materials and paints is now available from The DeVilbiss Company.

The pump has a two-to-one ratio, providing the capacity and pressure to supply two large, production type spray guns or the requirements of a small circulating system. The inlet extension tube automatically adjusts to the height of the drum and assures complete emptying.



Fast, sure valve action provides a steady, smooth delivery at the rate of 2.75 fluid oz. per cycle for all common types of finishing materials and paints ordinarily shipped in closed top drums. Pressure regulator gauge, safety valve, two air outlet valves, two fluid outlet valves, fluid bypass valve and return hose are included in the unit. For circulating systems, the pump is available with pressure regulator gauge and safety valve at less cost.

Manufacturer: The DeVilbiss Co., Toledo 1, Ohio.

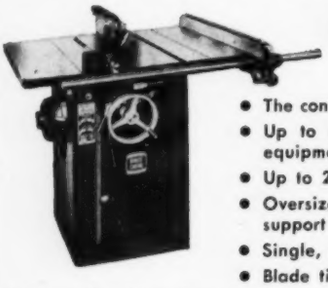
Use postpaid card. Circle No. 27

Door Sizer

The Kvalheim Machinery Co. has recently developed a width sizing machine. This machine, KVAL Model 550 SB, is generally used for sizing doors after they come from the press. It can be combined with a KVAL trim saw to automatically size doors for width and length at the rate of 250 per hour.

The doors are fed into the machine and cutterheads remove the bulk of the excess width and bring the doors down to size. While still going through the machine, the side edges are sanded

GET MORE POWER *and* GREATER PRECISION *with the* BOICE-CRANE 10" MONOMASTER SAW



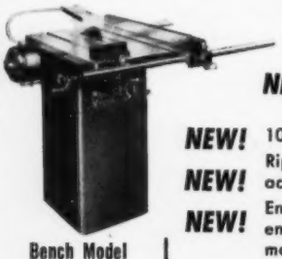
Only $275.00* (Formerly $315.00)

- Motors to 3 h.p. Outperforms many 12" saws.
- The convenience of a single, large blade-control handwheel.
- Up to 44% more ripping capacity (49") with standard equipment.
- Up to 29% faster blade speed.
- Oversize ANGLEMASTER trunnion provides rock-ribbed support for arbor.
- Single, steel table-insert serves both saws and dado heads
- Blade tilts left—safer for right-handed operators.
- Ground cast-iron fence.
- Up to three table extensions enlarge work table to over 50" wide.

*Basic unit. Motors options up to 3 h.p., switch, extensions, guard extra, but priced for further savings.

WHY BOICE-CRANE'S CHALLENGER

10" SAW gives you more for your money



Bench Model
Less Motor
$184.50

NEW! Using standard motors, drive system outpowers rolling-sliding pulleys, provides automatic belt tension. Reduces vibration and belt wear. Foolproof.

NEW! 10" blades fully retract with no added belt strain.

NEW! Ripping gauge improved and trouble-proofed. Split-hair accurate.

NEW! Entire under carriage, from trunnion to saw-arbor, re-engineered for added strength, shock absorption, larger motors.

A brawny, precision-quality circular saw, budget-priced.
More ripping and cutting-off capacity.
Oversize bearings, arbor, trunnions and undercarriage.

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BOICE-CRANE COMPANY

Builders for 50 Years.

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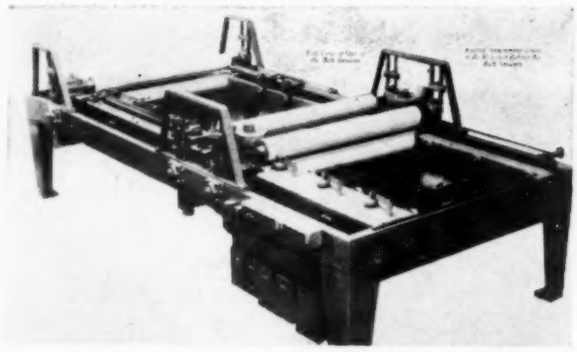


Kvalheim width sizing machine Model 550 SB.

smooth and then the sharp corners on the length of the doors are removed with newly designed easing units.

The easing units consist of a floating system of 45° router driven cutter. V guides are ahead and behind the cutters so that the doors funnel into the mechanisms. The depth of cut is independent of the rate of feed or the thickness of the material as the basic operation is similar to that of a simple jointer.

Manufacturer: Kvalheim Machinery Co., P.O. Box 77, Petaluma, Calif.

Use postpaid card. Circle No. 28

New Air-Driven Power Screwdriver

A new air-driven power screwdriver incorporating greater speed and ease of handling with an ability to reach into tighter spots has been developed by United Shoe Machinery Corp.

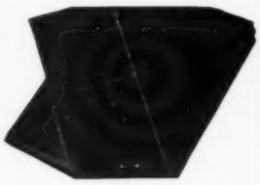
The new Powasert Model B screwdriver will automatically feed, position, and drive from 30 to 60 screws per minute at torques of 3.6 to 6.3 foot-pounds. At full speed, air consumption is an economical 11 cu. ft. per minute at 90 psi pressure.

The new model consists of a 4-lb. pistol-grip or straight handle gun and a separate feeder-separator unit that holds 10 lbs. of screws, or enough for a full day of continuous operation. With the nose in contact with work, light pressure on the work surface feeds and drives each screw automatically. A fast rotating separator gate and two-step elevator lifts provide positive one-screw control. Each screw is driven home before the next can be fed to the gun, and an improved feeder-separator mechanism entirely eliminates double-screw feeding.

All wood, sheet metal and machine screws from ½ to 1¾ inch in gauges

Click's Veneer Tables

For Manufacturers, Dealers Anyone Who Works With VENEER, PLYWOOD, CUT LUMBER, BOXES, Etc.



A handy book of accurate tables for quickly determining square feet contents of veneer plywood and the cubic contents of logs, complete to fractional units.

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Because they feature exclusive *Velvet Joints* which permit a smooth, even flow of cutting surfaces, Jewel Brand Abrasive Belts eliminate needless "chatter" and jumping . . . last longer under continuous operation. Try some and see!

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COATED ABRASIVES
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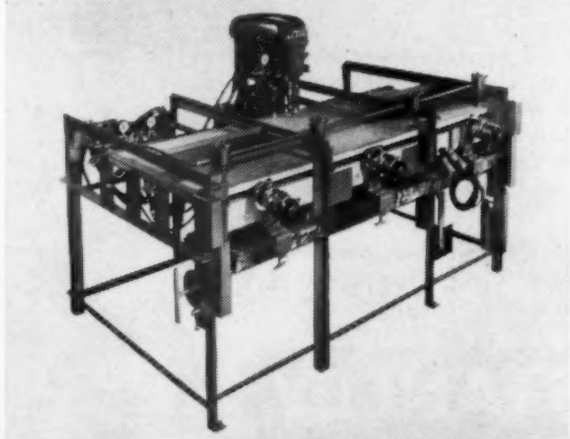
ABRASIVE PRODUCTS, INC.
South Braintree 85, Massachusetts



RUVO INTRODUCES A NEW PREHUNG DOOR ROUTING AND BORING MACHINE

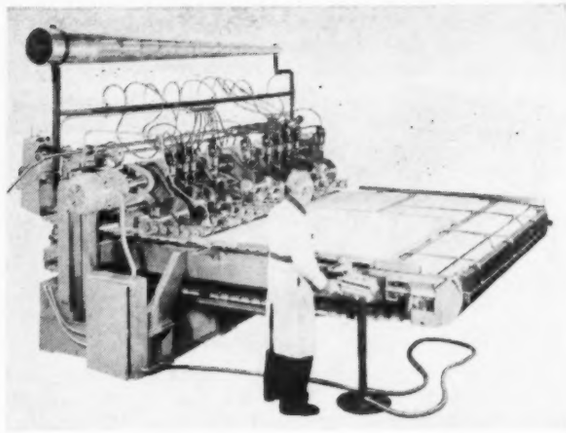
Door and Both Jambs Machined
with Hinges Attached—In One Operation
FAST - FOOLPROOF - ECONOMICAL

RUVO ENGINEERING CO.
GLEN HEAD, LONG ISLAND, NEW YORK

6 through 10 can be handled regardless of the type of head. As many as 26 different sizes and types of screws can be automatically fed and driven without change of fittings. Fitting changes for the entire range of screws can be made by the operator.

Manufacturer: United Shoe Machinery Corporation, 140 Federal Street, Boston 7, Mass.

Use postpaid card. Circle No. 29



Jenkins No. 190 slat bed with ten saw-equipped Uni-Lifts.

Slat Bed For Trimming

Plywood, veneer, particle board panels, measuring up to 120" x 60", can be effectively and accurately cut or textured with the Jenkins 190 slat bed with ten saw-equipped Uni-Lifts.

The ten Uni-Lifts may be individually raised or lowered from a portable remote control panel allowing the operator to select the number of saws for any given operation. Remote control of the Uni-Lifts permits changes in trim size or texture pattern by the operator without delaying or stopping production. Each Uni-Lift is horizontally adjustable along the power shaft providing further trim width selection and greater variety of texture design.

Unique new surface roller bearings have been provided on each Uni-Lift arm to gauge cutting depth to the surface of the panel. In a texturing operation, roller bearings automatically raise or lower the saw blade to assure a constant groove depth the entire length of the panel.

All holddowns remain effective at all times regardless of position of the Uni-Lift arm. This feature further assures accuracy in cutting and grooving.

The Jenkins exclusive piston-type chain with half-round brass track assures the precision of the 191 slat bed. Endless bed chain feeds are infinitely variable from 20 to 100 f.p.m. Other speeds are available. Each wooden slat is backed with a heavy aluminum channel for added rigidity and stability. Three support tracks under cutters and holddowns provide maximum support and further assure accurate cutting.

The Unit is complete with electric controls, scales for setup, dust hoods, flexible dust tubes, overhead manifolds, guards and other safety features.

Manufacturer: Jenkins Woodworking Machinery Div. of Kohler-Joa Corp., Sheboygan Falls, Wisconsin.

Use postpaid card. Circle No. 30

Signode Acquires Cruickshank Patents

The Signode Steel Strapping Co., has purchased the Cruickshank patents No. 2,371,878 and No. 2,436,554 (4-way

EDMONT CASE NO. 530: For handling rough lumber, $1 a pair leather gloves lasted 12 shifts. Edmont recommended a tough, vinyl-coated glove (No. 303 Monkey Grip) which wore 22 shifts, cutting glove costs 64%.

Job-fitted glove cuts cost 64%

No. 303 fully coated knitwrist

In case above, the Edmont-recommended glove outwore leather nearly 2 to 1 because it fit the job. Edmont's special vinyl coating has outstanding resistance to abrasion and reduces hand injuries resulting from penetrating slivers. Perfect hand fitting pattern assures comfort and dexterity.

Free Test Offer to Listed Firms: One of our more than 50 types of gloves is job-fitted for your operation. Describe the job, materials handled, temperature condition. We will supply samples of the correct glove for on-the-job testing.

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In Canada write MSA, Toronto

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JOB-FITTED
GLOVES

You can do more—faster when you use...

STANLEY BITS & CUTTERS

Stanley makes over 200 different bits and cutters for your router or shaper. Every one is precision-ground to give you a faster, smoother, more accurate cut every time.

You can make many different shapes, curves, grooves and designs with these high speed Stanley bits and cutters. See the complete display at your supplier's. Or for free pamphlet write.

Stanley Electric Tools, Div. of The Stanley Works, 7903 Myrtle St., New Britain, Conn.

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COMPETITIVE PRICED BEECH SQUARES IMPORTED FROM THE FINEST MILL IN SCANDINAVIA MADE TO ANY SPECIFICATIONS

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FOUR SIDES CLEAR
FREE OF CHECKS, KNOTS & SPLITS
SAMPLE PRICES PER THOUSAND PIECES

2x2	8"	15"
	$44.75	$91.75
	24"	30"
	$159.50	$216.75
2½ x 2½	8"	15"
	70.50	145.25
	24"	30"
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MAPLE & ASH SQUARES

- Dimension stock to your specs.
- Legs finished & unfinished.
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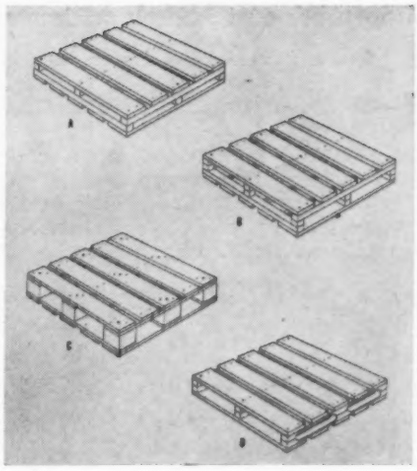

entry pallets). The new pallets are usually made of wood, have combinations of fastenings such as nails, screws and bolts. They are all of the 4-way entry type and are of heavy construction. There are four basic designs, plus various modifications.

All Signode wood pallet licensees are presently licensed to sell the standard 4-way entry, block type or notched stringer type pallet under patent No. 2,369,944. They will also be able to have rights under the new patents.

Manufacturer: Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill.

Use postpaid card. Circle No. 31

"Egads, sir . . . there's been nothing like 'em since the Flora Dora girls!"

Few performances can match the superlative grinding, smoothing, and polishing action of Jewel Brand Abrasive Belts. A trial run proves it! Order through your Industrial Distributor today.

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ABRASIVE PRODUCTS, INC.
South Braintree 85, Massachusetts

Now, with more than fifty models in the Dustkop line—plus efficient accessory items—the odds are that a standard unit will solve your problem. Dustkop units solve other problems too. They're easier to install, save space and money and are virtually maintenance-free!

how to select a dust collector

This new brochure includes all basic information needed to select the right dust or mist collector for grinding, buffing, polishing and other types of service. Write for your copy. No obligation.

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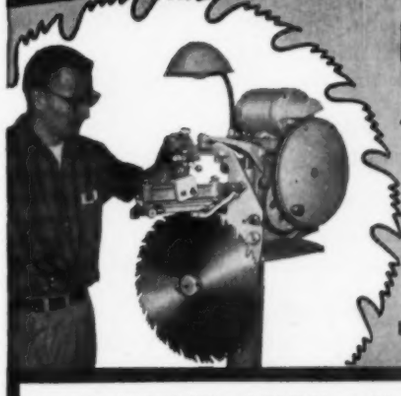
DUSTKOP STOPS DUST

COMBINATION SAWS
can now be filed automatically
with the New MODEL 200
FOLEY Automatic SAW FILER
Also CROSSCUT CIRCULAR SAWS, BAND SAWS, HAND SAWS



This is the FIRST and ONLY machine which will file the so-called "combination" (rip and crosscut) circular saws; also crosscut circular saws, band saws, all types of hand saws.

The exclusive Foley principle of jointing the saw as it is filed, keeps teeth uniform in size, shape and spacing; keeps circular saws perfectly round, usually doubles saw life

30-Day Trial Offer. You may try the new Model 200 Foley Saw Filer in your own shop for 30 days. Write for literature and details of 30-day trial offer.

FOLEY MFG. CO. 3351 N.E. 5TH STREET MINNEAPOLIS 18, MINN.

Fay & Egan Adds New 24" Single Surfacer and 16" Hand Jointer

Two new, rugged, ball bearing production machines have been added by the J. A. Fay & Egan Company to its modern "900" line of woodworking machinery. The Cincinnati firm now has available a new 24" single surfacer, No. 970, and a new 16" hand jointer, No. 975.

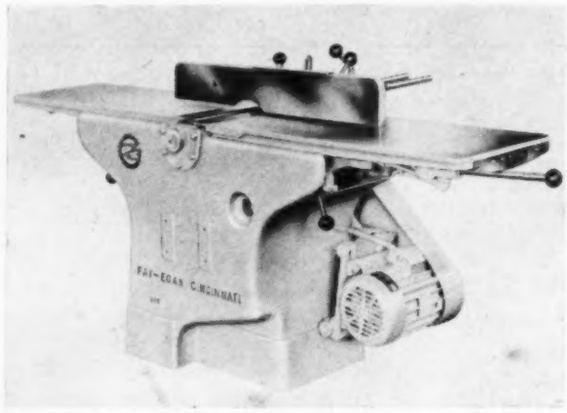
The Fay & Egan No. 970 24" single surfacer features a four-knife dynamically balanced round safety type cylinder. Ball bearing mounting of rolls and 7½ h.p. motor assures smooth operation essential to accuracy.

The new machine surfaces one side up to 24" wide, 8" thick, with two feeds, 27 and 42 f.p.m., available. Overall length of the table is 32"; it is raised and lowered on large screws through a handwheel.

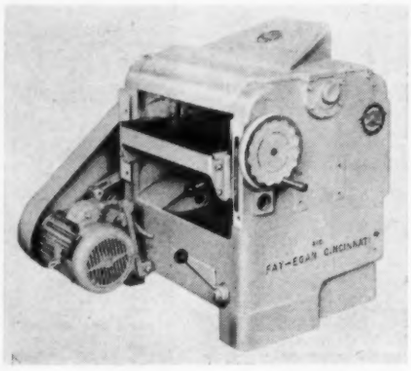
The cylinder, which revolves at 4500 r.p.m., is powered by a fan-cooled, totally enclosed, ball bearing motor, with v-belt drive. A magnetic starter provides overload and undervoltage protection.

A new type knife grinding attachment is available as an optional feature with the No. 970 single surfacer. This screw-type attachment, mounted on the machine at the factory, permits grinding of knives without the time-consuming removal of the components from the machine.

The Fay & Egan No. 975 ball bearing 16" hand jointer planes or joints one side of lumber up to full width, and rabbets up to 5/16" deep. Its four-knife round safety type cylinder, fitted with a set of high-speed thin steel knives, has a 5" swing and runs in ball bearings. It is powered at a speed of 4800 r.p.m. by a 5 h.p. ball bearing motor mounted on the base, with short v-belt drive.



Fay & Egan's 16" hand jointer.



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STAY SHARP
30% LONGER
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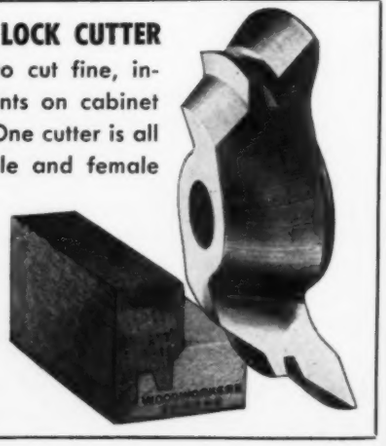
CHAMPION MITRE LOCK CUTTER

For use on shaper to cut fine, invisible mitre glue joints on cabinet work, furniture, etc. One cutter is all you need to cut male and female joints. Furnished in high speed steel or carbide tipped.



WOODWORKERS' TOOL WORKS
224 S. Jefferson St.
Chicago 6, Illinois

Simple adjustment is featured throughout the jointer. The 38½" infeed and 39" long outfeed tables are raised and lowered easily and accurately on four precision ways, with steel removable lips and inserted at the throat. The adjustable bevel fence, 36" long by 5½" high, has a scale showing exact thickness of finished stock.

The new hand jointer also features magnetic controls with provision for overload and undervoltage protection, and a heavy, one-piece structure, with the dust chute cast in the frame.

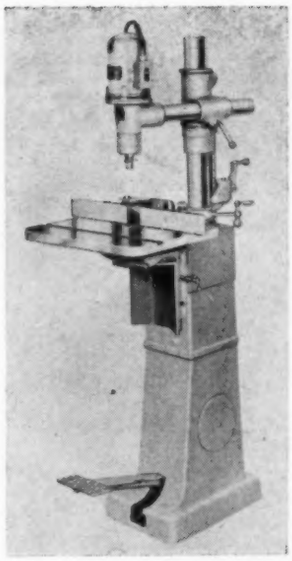
In addition to these two new machines, the Fay & Egan 900 series includes the No. 969-V planer-matcher-moulder, providing variable feed from 20 to 60 f.p.m.; and the rugged No. 940 24" band saw for high-speed scrolling and resawing.

Manufacturer: J. A. Fay & Egan Company, 2011 Eastern Ave., Cincinnati 2, Ohio.

Use postpaid card. Circle No. 32

Multi-Purpose Machine

This new Duro 3-in-1 machine will do routing, shaping and carving. It is a stationary power tool with three-way versatility. The Duro router-shaper-carver offers a new automatic lock, crank type head which raises and lowers mechanisms. The table travels on dovetail ways.



Spindle speed for this machine is, without load 20,000 r.p.m.; motor power, output 1.6 h.p. 1200 watts; chuck capacity for routing ¼" bore shaping cutters; work table measures 18" x 14" with a 20" fence, 2¼" high. **Manufacturer: Duro Metal Products Co., 2651 N. Kildare, Chicago 39, Ill.**

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Other New Equipment Is Described On Pages 104-106

"Good heavens, Ambrose . . . you mean we're completely out of them?"

Disturbing as it seems, people occasionally run out of Jewel Brand Abrasive Belts. Fortunately, they can replenish their supply quickly and easily through their nearby Industrial Distributor. Check *your* stock now!

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FASTER • TOUGHER • TROUBLE FREE!

SUPREME BAND SAWS

SUPREME BAND SAWS cut faster . . . have increased cutting capacity with minimum breakage! Present day high speed equipment demands Supreme Saws. Free from kinks and imperfections. Made from the finest Special Nickel Alloy Steels, tempered for toughness . . . to stay sharp! There is a Supreme Band Saw for every industry . . . for every material. Special purpose saws are made to order.

Quick Service REPAIR & RENEW CARBIDE-TIPPED CUTTERS

SEND US YOUR CARBIDE-TIPPED KNIVES, CUTTERS, ROUTER BITS

We will promptly repair, retip and sharpen your Carbide-Tipped tools and get them back to you without delay. Skilled workmen and precision equipment insure fast service and complete satisfaction in restoring cutting efficiency.

PROMPT . . . DEPENDABLE SERVICE

THE SAW & KNIFE SPECIALTY CO., INC.

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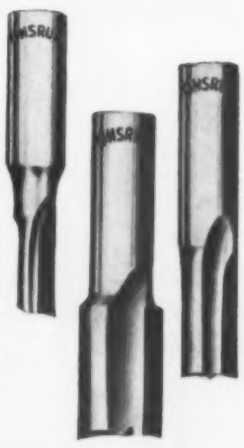
WITH ONSRUD CARBIDE TIPPED and SOLID CARBIDE

ROUTER BITS

You save cutter expense and time with ONSRUD carbide router bits — because you buy fewer bits and stop for sharpening less frequently. For hard or abrasive materials, synthetics, plastics and metals, these cutters are the last word. They often fill the bill where all others fail. The grade of carbide used in these bits is of proven quality, tough as well as hard to withstand the shock and vibration incidental to hand fed routing.

Write for illustrated BULLETIN and PRICES.



ONSRUD CUTTER MFG. CO.

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WOOD THROUGH THE AGES

when converting **TREE TRUNKS** into planks . . .

THE SAWYERS OF ANCIENT EGYPT LIGHTENED THEIR LABOR BY USING COUNTER WEIGHTS TO KEEP SAW CUTS OPEN!

Egyptian WOOD

CRAFTSMEN OF ANTIQUITY WERE SO SKILLFUL AT IMITATING OTHER MATERIALS THAT THEY EVEN WERE ABLE TO MAKE WOODEN VASES THAT "PASSED" FOR STONE WARE!

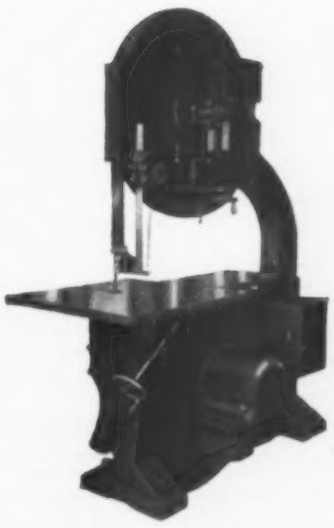
AL REET

TO FINISH A CONSTRUCTION JOB IN TIME FOR THE KING TO INSPECT IT, THOSE IN CHARGE OF THE PROJECT UNDERWAY AT MOOREND, ENGLAND, IN 1365, SET UP DAY AND NIGHT SHIFTS, AND BOUGHT AN 18-LB. BELL WHICH THEY CLANGED AT REGULAR INTERVALS TO KEEP CARPENTERS WORKING AT TOP SPEED.

What does your bandsawing cost YOU?

If you are operating any but a TANNEWITZ HIGH SPEED BAND SAW, the answer is: A lot more than necessary. For nothing rivals the TANNEWITZ for ease and speed of cutting and the smoothness of cuts which eliminates most of the clean-up operations that usually follow. And there's sound basic reason for this. TANNEWITZ BAND SAWS not only deliver over TWO MILES of sawblade travel per minute, but they do so with absolutely no vibration — an all-important factor not found in other so-called high speed band saws. You'll find your production goes up and your costs are radically reduced when you install a TANNEWITZ Band Saw. What about maintenance? It's practically nothing . . . they're built for a lifetime of near trouble-free service. Drop us a card or phone for complete information.

The line contains High Speed Band Saws and Mitre Saws to ideally suit every shop requirement. Consult us on your needs.



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Band Saws, New Delta 20" bb, dmd.
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Borers, Andrews Sgl. Spdle. dmd.
Borers, Greenlee No. 370—5 Ft. 6 Spdle. Horiz. DMD.
Borers, McKnight 88C, Chucking DMD.
Borers, Moak & Pryble 2 spdle., horiz.
Borers, Root D-360 horiz. 13 spindles dmd.
Carver, Yates-A Sgl. Spdle. bb, dmd.
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Clamps, Black Bros. 40 Sect. 8 Ft. Cat. 5 Clamps sec.
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Frequency Changers, 25-33 75, DMD.
Glue Jointer, Yates No. 213 & Jenkins 343-A, bb, dmd.
Glue Spreaders, Francis 12" Sgl. Roll, V-drive
Glue Spreader, Francis 60" SPD rub. rls.
Grinder, Buffalo 76" knife dmd.
Jointers, F&E 12" bb, v-belt dr.
Jointers, New Moak 12", bb, dmd.
Jointers, 8" and 16", 24" & 30" & 12"
Lathes, Mattison 57D bb, dmd.
Lathes, Whitney back-knife, BB, V-drive
Mortiser, New Britain No. 7 bd. & motor
Mortiser, W & M No. 284 Sgl. Spdle. bb, dmd.
Moulders, Amer. No. 35—10" BB, DMD.
Moulders, Hermance 12" BB. BD & Motor
Moulder, Vonnegut 12", BB, DMD.
Moulders, Vonnegut 4"—BB, DMD.
Moulders, Woods 137M—8" electric
Planers, Berlin 36" round belt dmd.
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Planers, Buss 30" double, bb vee-belt & motor
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Planers, Whitney No. 32—30" Sgl. bb, dmd.
Planers, Y-A No. 186, Dbl. 20" DMD.
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Sanders, Jefferson Hand Stock dmd.
Sander, Pearson Sgl. Spdle. Vert. dmd.
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McKnight Vertical oscil. sgl. drum, motor drive
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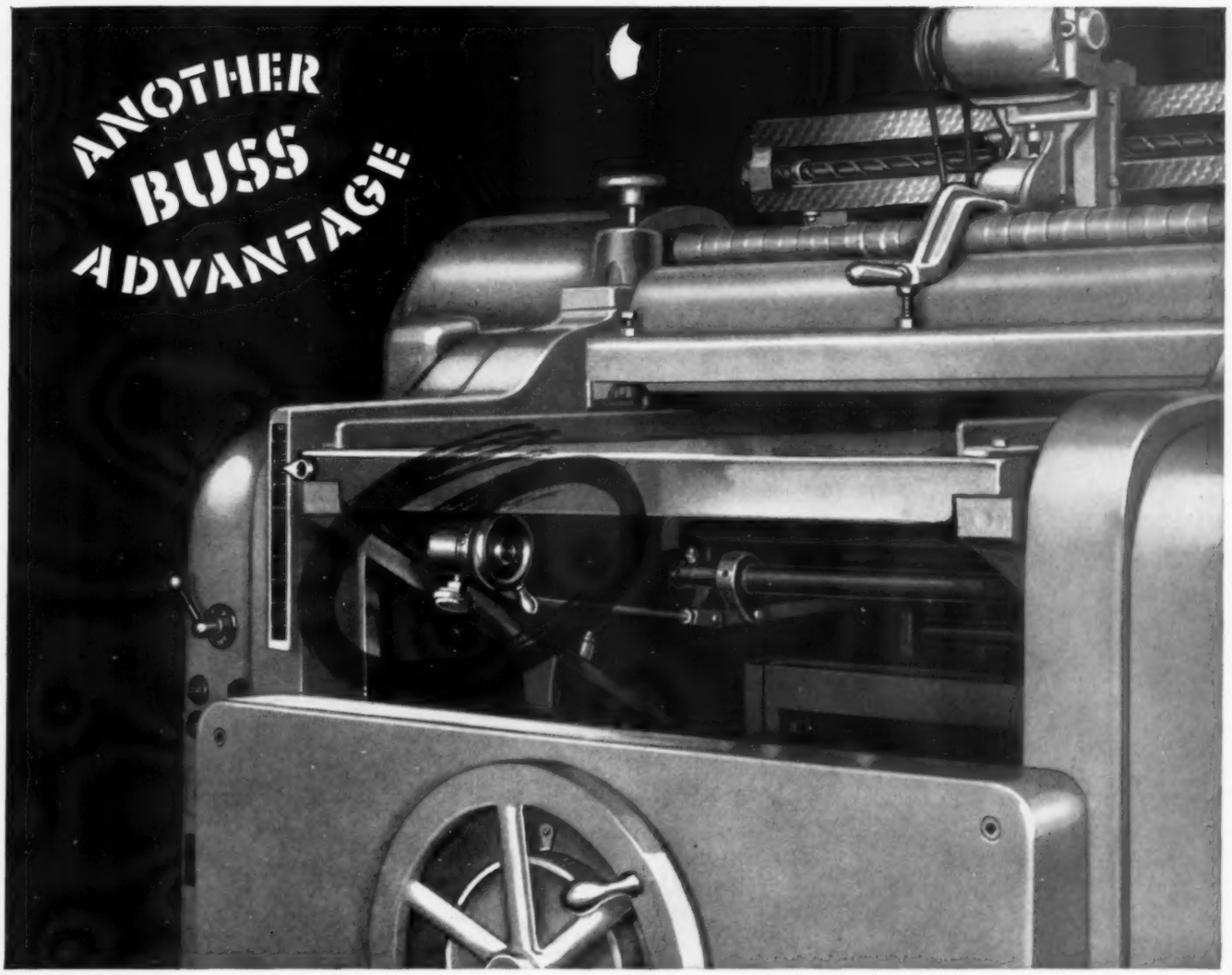

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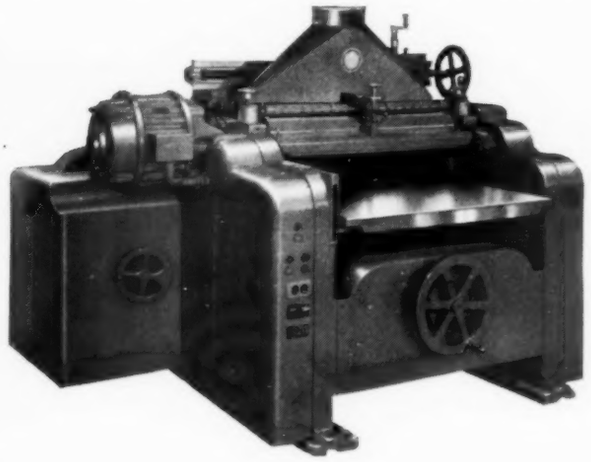

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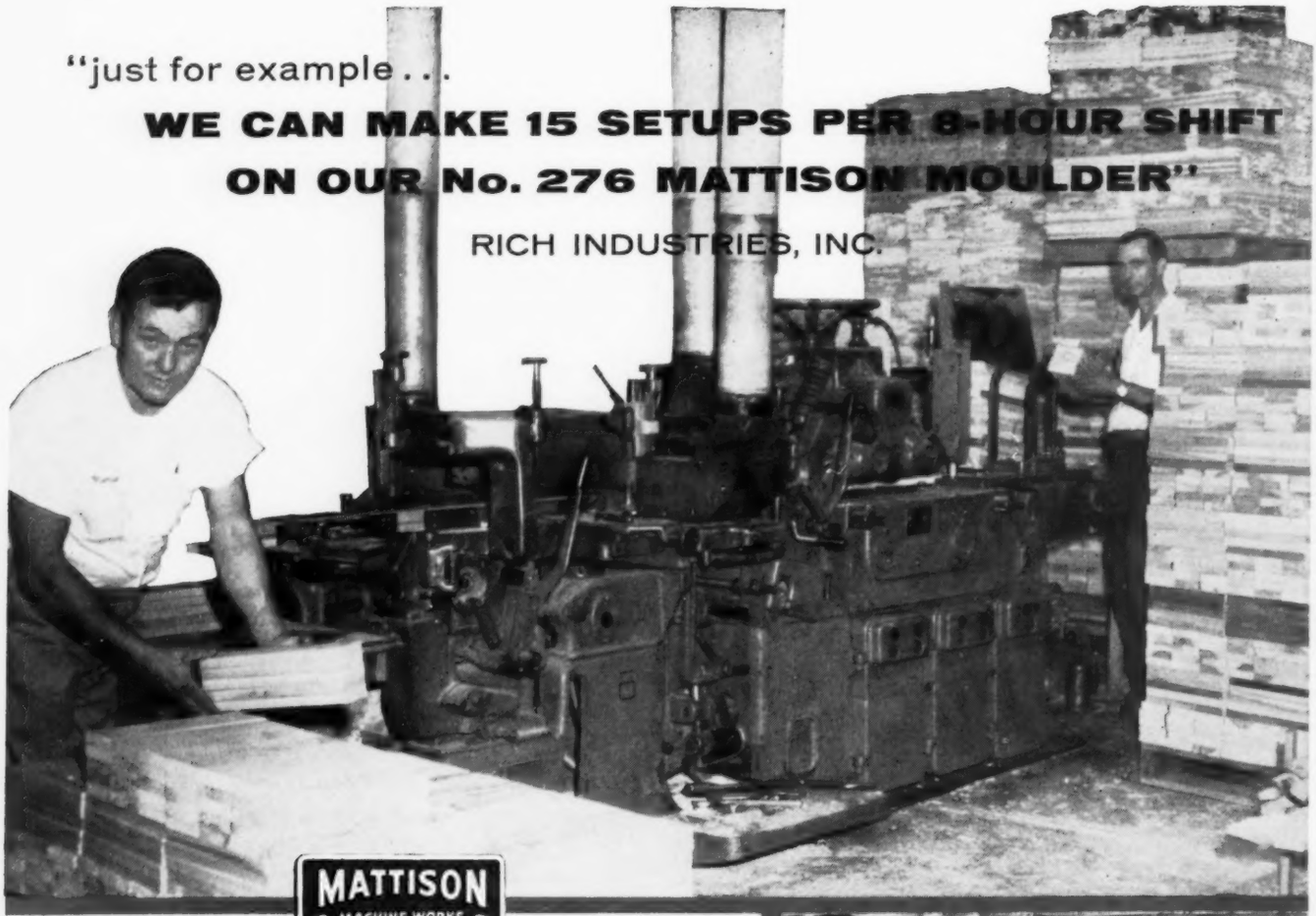
WE CAN MAKE 15 SETUPS PER 8-HOUR SHIFT ON OUR No. 276 MATTISON MOULDER"

RICH INDUSTRIES, INC.

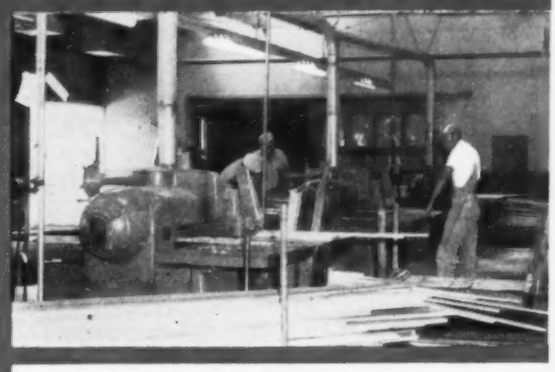


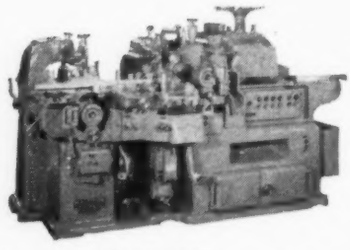
MATTISON
MACHINE WORKS
ROCKFORD, ILL. U.S.A.

After operating five Mattison Woodworking Machines 16 hours a day for over four years, Rich Industries, Tupelo, Mississippi, toy and game manufacturer, is more enthusiastic than ever. "Maintenance is still low—our invoices from Mattison clearly illustrate this fact, and we would be glad to show them to anyone.

"It would also be a pleasure to show any prospective user the many ways you can save time and money with these fine machines. Here is just one example: On make-up and short runs with the No. 276 Moulder, we do 12 to 15 setups in one eight-hour shift!"

In addition, Rich uses a No. 229 Moulder and three No. 202 Ripsaws. Mattison versatility, fast output, precision production, and long service with low maintenance can be important plus factors in *your* business—be sure to learn the details. Just use the handy coupon below.





Mattison No. 276 Moulder—Available in 4" and 6" sizes, these machines feature precision vibration-free operation for delicate mouldings . . . power and ruggedness for larger mouldings. Close-coupled, high-speed design gives high-capacity, low-cost production.

MATTISON
WOODWORKING MACHINERY

Mattison Machine Works
Rockford, Illinois

Please send literature on ( ) Mattison Moulders, ( ) Mattison 202 Ripsaw.

Name_____

Company_____

Address_____

City_____ State_____